1323

Health of India

153

நூலகம்
நாள்:....................

Edited by Dr. S. C. Seal.

in Collaboration with

Col. C. K. Lakshmanan

Dr. (Mrs.) Muktha Sen

Dr. K. Mitra

Dr. B. Ganguly

Dr. T. R. Bhaskaran

Dr. B. C. Das Gupta

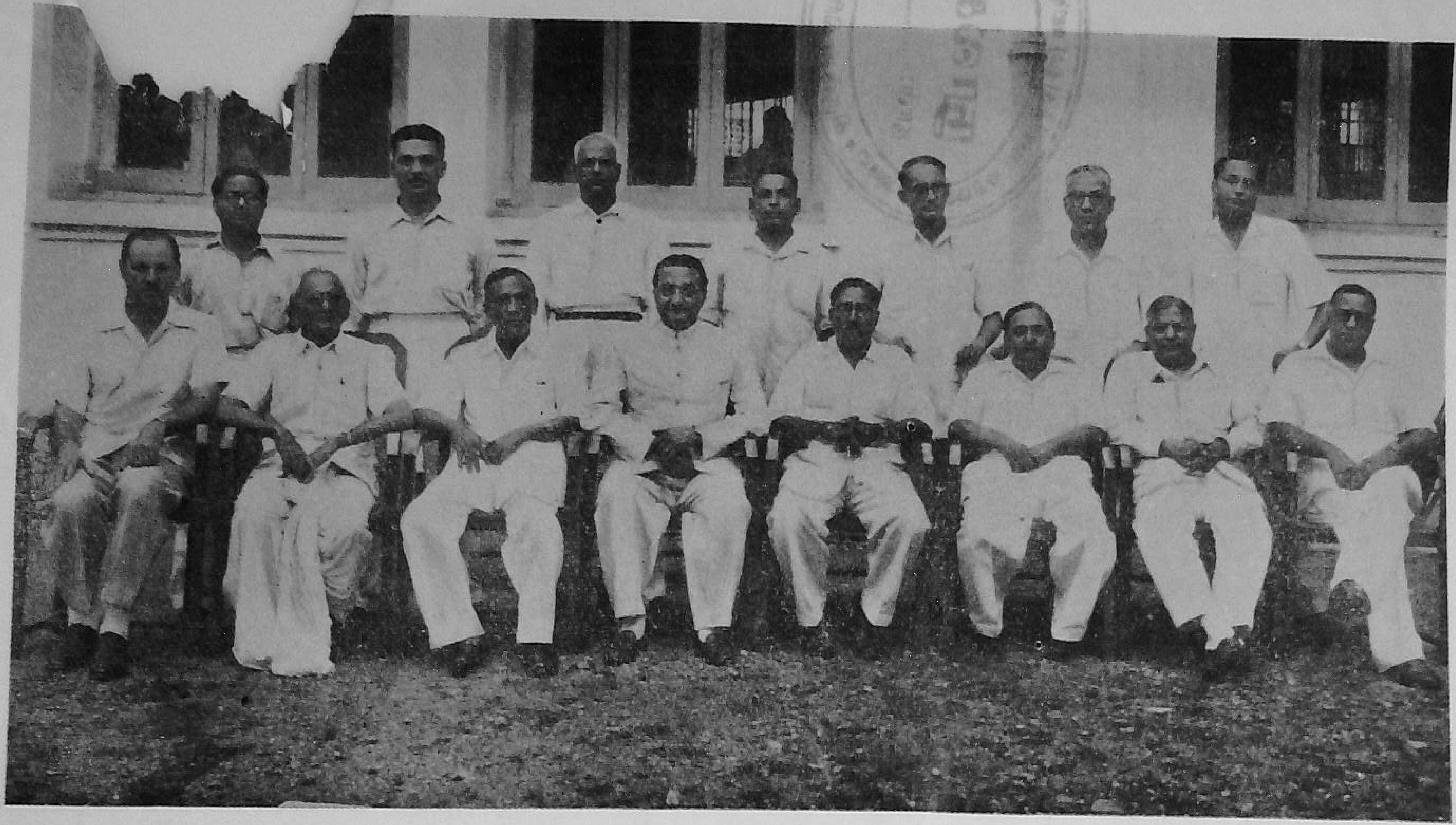
Dr. S. Dakshinamurty

Dr. K. C. Patnaik

Dr. T. B. Pat…

Dr. M. R. Fiel…

Price Rs. 10/- nett



MEMBERS

Sitting (left to right): Dr. M. R. Fields; Dr. B. Ganguly; Dr. S. E. D. Masilamani; Dr. Amarnath Mukherji, Deputy Mayor of Calcutta—(Chairman); Dr. S. C. Seal (Secretaary & Treasurer, I.P.H.A.); Dr. K. C. Patnaik (General Secretary); Dr. R. Biswas; Dr. K. S. Viswanathan. *Standing (left to right)*: Dr. A. L. Saha; Lt.-Col. K. C. Mukherji; Shri S. Rajagopal; Dr. B. N. Pattanayak; Dr. B. Mookherji; Dr. M. N. Lahiri; Dr. S. Mukherji (Joint-Secretary).

Absentees: Dr. S. K. Chatterji (Vice-Chairman); Dr. Souren Sengupta; Dr. P. K. Ghosh, Dr. I. N. Sarkar (Joint-Secretary); Dr. Suhrid Sen; Dr. M. N. Sarkar (Vice-Chairman); Dr. R. N. Chaudhuri; Dr. J. K. Bhattacharya; Dr. A. Mukherji.

Foreword

MINISTER,
Medical and Public Health Department,
Government of West Bengal,
Calcutta, the 26th September, 1956

I am glad to learn that in connection with the inauguration of the Indian Public Health Association, the organisers are publishing a Souvenir depicting some of the pressing needs of the country which is fast developing in the field of public health.

I am pretty sure that this publication will prove interesting to those who are attending the conference, particularly when this contains narratives in the field of development work which has been undertaken by various agencies in different parts of the country. The publication contains in short the activities of various International Organisations as well as the Institutions which are working hard in developing better conditions of health in our country.

I hope the readers will be able to take stock of things which prevail now and plan for further improvement in various fields for the future.

a
spect it to
ehensive and
omings which,
way of the objec-
compiled and

I extend to all those who are participating in the conference work during the session and after.

S. C. SEAL.

A. D. MUKHARJI.

INDIAN PUBLIC HEALTH ASSOCIATION

MEMBERS OF THE INTERIM WORKING COMMITTEE

Chairman,
L. C. K. Lakshman.

Vice-Chairman,
Dr. B. C. Dasgupta.

Secretary Treasurer,
Dr. S. C. Seal.

Mrs.) Muktha Sen.

Dr. S. E. D. Masilamani.

Dr. K. S. Viswanathan.

Dr. J. K. Bhattacharyya.

Dr. A. Mukherji.

Sri G. N. Mitra.

Dr. B. Ganguly.

PREFACE

It is in the fitness of things that some members of the Indian Public Health Association expressed the desire to bring out an illustrated 'Souvenir' to commemorate the birth of the Association. It is the first time in the recent history of India that such an organisation has been successfully ushered into existence at a time when the operation of various 'Nation Building Plans' has been undertaken by the country. This coincidence of the two historical events has been considered opportune to present a theme on 'Health of India' which may serve as a hand book of reference on the salient health problems of the country at a glance.

As it is the history of the past that guides us to build up the present and to project for the future, an attempt has been made in this Souvenir to review the present in the back ground of the past and to high-light the Health Problems with a view to stimulate better planning for the future. Also in keeping with the tradition of scientific and cultural associations in publishing a Souvenir to furnish useful guidance and information about the city welcoming the members and delegates to a session, this volume also presents a short account of Calcutta—the birth place of so many other associations, and a city which has made great strides in the field of cultural, educational, scientific, technological and industrial developments.

The undertaking was rather an adventure for us, as the idea mooted out just only two months before the provisional date of 4th August for inauguration. The assurance given by my esteemed collegue, Dr. Sonti Dakshinamurti of Andhra Medical College to help me in the secretarial work associated with the task of collecting notes and reports from various eminent persons and organisations in the field of Public Health and allied subjects prompted me to take the decision of bringing out the volume inspite of my heavy load of other work.

At one stage the task of finishing the work seemed impossible for want of sufficient time for editing and printing, as most of the notes and material for publication reached my hands only in September, 1956. But with the help and cooperation of the staff of my Section and the press it has finally been possible to bring it out somehow in time. To complete the series of information about the topics covered in this Souvenir we have freely drawn upon the available literature.

In the fulfilment of this task our grateful thanks are due to those who, in response to our request, on short notice, generously contributed data, notes and articles with or without photographs, maps, charts, etc. We also offer our sincere apologies to those whose articles we had to edit or to re-write, often without their consent or confirmation for want of time.

Many thanks are specially due to Dr. Dakshinamurti who, inspite of the handicap of distance, kindly offered his assistance in the organisational part of the work. I also wish to take this opportunity of expressing my gratitude to all workers of the Epidemiology Section of the All India Institute of Hygiene and Public Health, Calcutta, who worked incessantly for the preparation of charts, diagrams, maps etc. and the typing of a large volume of publication material, without whose help it would not have been possible to bring out the Souvenir. No less credit is due to the Press (Gossain & Co.) for taking pains and care to publish it in the shortest time available.

It, however, requires no mention that in a hurried work like this one cannot expect it to be in any way complete or comprehensive and there is bound to be many short-comings which, we hope, will not stand in the way of the objectives with which it has been compiled and presented.

S. C. SEAL.

INDIAN PUBLIC HEALTH ASSOCIATION

MEMBERS OF THE SOUVENIR EXHIBITION SUB-COMMITTEE

Chairman,
COL. C. K. LAKSHMAN.

DR. B. C. DASGUPTA.

DR. S. DAKSHINAMURTY.

DR. (MRS.) MUKTHA SEN.

DR. K. MITRA.

DR. M. R. FIELDS.

DR. B. GANGULY.

DR. K. C. PATNAIK.

DR. T. R. BHASKARAN.

DR. T. B. PATEL.

(Secretary, I.P.H.A.).
DR. S. C. SEAL.

MULTIVITAMIN DROPS

in AQUEOUS SOLUTION

with ACETYL METHIONINE to correct Liver Dysfunction due to Malnutrition & FOLIC ACID for Associated ANAEMIA

Lewis, J. M. & Cohlan, S. Q. M. Clin. N. A. 34. 413. 1950 report:

"Aqueous Solutions of VITAMINS 'A' and 'D' are far more rapidly, more fully and more surely absorbed and utilised than oily solutions—passing with greater case through the intestinal mucosa barriers. With Vitamin 'A' in aquous solution, there is up to 300% greater absorption, 160% higher liver storage and 67% less loss through foecal excretion."

Available in 5 c.c. and 10 c.c. phials with dropper.

COMPOSITION:

Each c.c. contains:

Vitamin A 15000 I.U. Vitamin D 3000 I.U.
Vitamin B_1 12 mgm. Vitamin B_2 1 mgm.
Sodium Pantothenate 4 mgm. Vitamin B_6
2 mgm. Niacinamide 15 mgm. Vitamin C 100 mgm.
Acetyl Methionine 50 mgm. Inositol 50 mgm.

ALBERT DAVID LIMITED

15, CHITTARANJAN AVENUE,
CALCUTTA 13

BOMBAY : MADRAS : DELHI : NAGPUR : VIJAYAVADA
SRINAGAR : GAUHATI

with the compliments
of

BURROUGHS WELLCOME
& CO. (INDIA) PRIVATE LTD.

POST BOX 290, BOMBAY 1

T.C.F.

Standardised and Dependable Pharmaceuticals, Biologicals, Vitamins and Hormones for the Medical Profession

TEDDINGTON CHEMICAL FACTORY PRIVATE LTD.
(Biological & Pharmaceutical Laboratories)
SURÉN ROAD, ANDHERI, BOMBAY.

Sole Distributors:
W. T SURÉN & CO. PRIVATE LTD., P. O. Box 229, Bombay 1.
Branches: CALCUTTA: P.O. Box 672 MADRAS: P.O. Box 1286

WT. 1681-A

Fundamental forms

in corticosteroid therapy

systemic

Deltacortril*
brand of prednisolone

TABLETS as scored 5 mg. oral tablets.

Potent analog of hydrocortisone;
antirheumatic, antiallergic, antiphlogistic;
effective even where other steroids fail;
virtually devoid of major hormonal action.

Cortril*
brand of hydrocortisone

topical

TOPICAL OINTMENT 1.0% & 2.5%

OPHTHALMIC OINTMENT 0.5% & 2.5%

unsurpassed anti-inflammatory, anti-allergic therapy for dermatitis or superficial eye disorders.

ACETATE AQUEOUS SUSPENSION 25 mg. per cc.

Local anti-rheumatic therapy of choice in arthritic joints — without systemic effects.

topical combination

Terra-Cortril*
brand of oxytetracycline hydrochloride and hydrocortisone.

TOPICAL OINTMENT containing 3% TERRAMYCIN† and 1% CORTRIL*

OPHTHALMIC SUSPENSION containing 5 mg. TERRAMYCIN and 15 mg. CORTRIL per cc.

Combined anti-infective, anti-inflammatory therapy for skin and eye disorders of infectious origin or those complicated or threatened by secondary microbial invasion; unites the established antibiotic range and the therapeutic and prophylactic predictability of TERRAMYCIN with the outstanding topical activity of CORTRIL.

* Trademark of Chas Pfizer & Co., Inc.

† Trademark of Chas Pfizer & Co., Inc for its brand of oxytetracycline

Pfizer *World's Largest Producer of Antibiotics*

VITAMIN-MINERAL FORMULATIONS HORMONES

PFIZER EASTERN CORPORATION
NEW YORK - PANAMA - BRUSSELS

Exclusive Distributors in India.
RAVISON PHARMACEUTICALS LTD.
P. O. Box No. 1636, BOMBAY 1. Grams: "RAVIPHARM"

AMINOZYME

Amino Acids cum Enzymes

BUILDS HEALTHY BODY

Each fluid ounce contains—

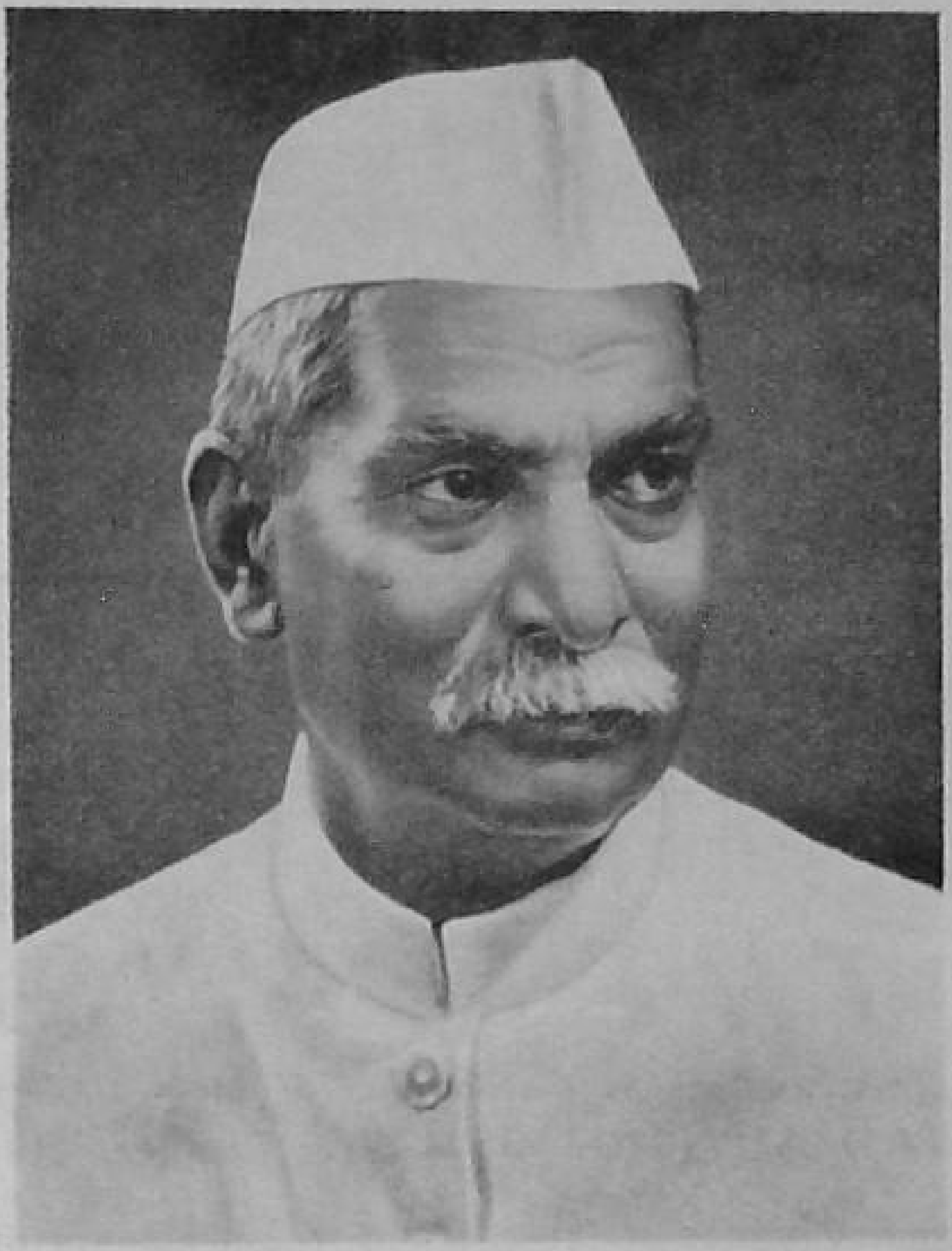
Amino Acid (20 p.c. W/V) approx.	..	6000 mg.
Folic Acid	..	1.5 mg.
Vitamin B_1	..	5 mg.
Vitamin B_2	..	4 mg.
Vitamin B_6	..	0.5 mg.
Nicotinicacid-amide (p.p)	..	20 mg.
Vitamin C	..	20 mg.
Proteolytic Enzymes		125 mg.
Amylolytic Enzymes		75 mg.
Lipolytic Enzymes	..	75 mg.

With other necessary adjuvants.

Pleasant Flavour and Taste

STADMED PRIVATE LIMITED

106-1A, RAJA DINENDRA STREET : : CALCUTTA-4



" Indigenous systems were less expensive and helped to do away with the country's dependence on foreign countries in the field of medicine. The raw materials from which indigenous medicines were made was available in the country itself."

" A large section of the Indian population, particularly the peoples in the countryside, continued to patronise Ayurved and the Unani systems. It was not entirely because of the non-availability of modern hospital facilities in the villages but also because of those men's faith at the indigenous systems of medicine."

RAJENDRA PRASAD.

SADHANA OUSADHALAYA

206, CORNWALLIS STREET,
CALCUTTA - 6

PENICILLIN

HIGH POTENCY · PURITY · STABILITY

FOR THE PHYSICIAN

Manufactured by The Government of India Undertaking

HINDUSTAN ANTIBIOTICS LTD., Pimpri, Near Poona.

Prepared and vialled under strict exacting requirements of Govt. of India Drug Rules. Available in the following varieties and dosages at current prices.

CRYSTALLINE PENICILLIN G SODIUM

for aqueous intramuscular injection, supplied in 2 lac., 5 lac and 10 lac units per vial.

PENICILLIN G PROCAINE Fortified With CRYSTALLINE PENICILLIN G SODIUM

for aqueous intramuscular injection, supplied in 4 lac units per vial. Contains 75% Penicillin G Procaine and 25% Crystalline Penicillin G Sodium.

PENICILLIN G PROCAINE

for aqueous intramuscular injection, supplied in 15 lac units per vial.

BICILLIN—ALL PURPOSE for aqueous intramuscular injection, supplied in 12 lac units per vial. Contains 6 lac units DiBenzylEthyleneDiamine DiPenicillin G, 3 lac units Penicillin G Procaine and 3 lac units Penicillin G Potassium.

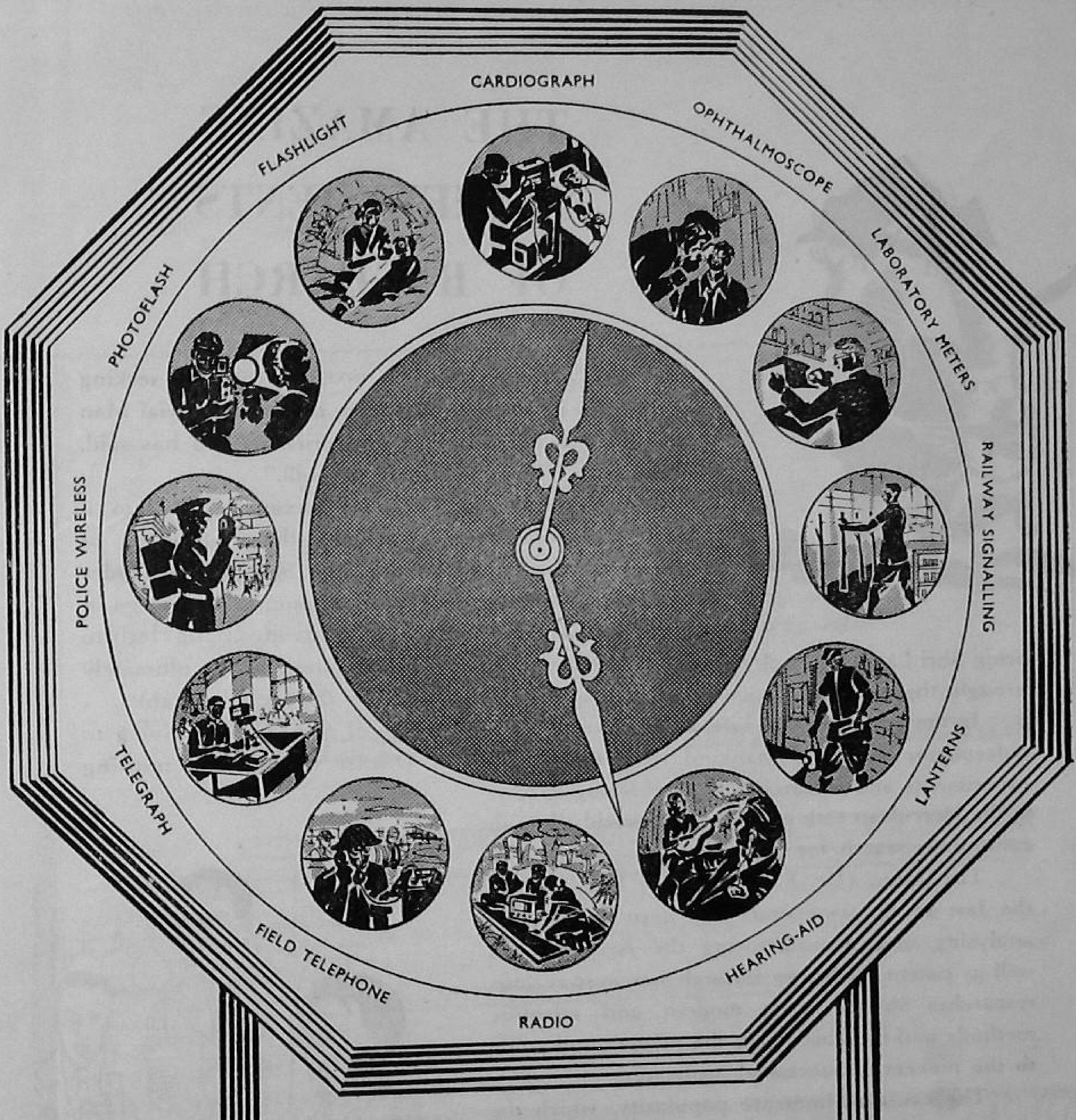
CRYSTALLINE PENICILLIN G PROCAINE-IN OIL

Ready to use Suspension Containing 300,000 Units per CC. In Vials of 10 CC.

Selling Agents ➡ Messrs. PARRY & CO. LTD., Madras, Calcutta, Delhi and Bombay.
Messrs. KEMP & CO. LTD., Bombay, Delhi, Madras and Calcutta.

HINDUSTAN ANTIBIOTICS LIMITED, Pimpri, Near Poona

BOTTLING PLANT at KING EDWARD ROAD, PAREL, BOMBAY 12



At this very moment . . .

. . . each second of every hour of every day of the year someone somewhere in India turns the switch on a device powered by an

EVEREADY
TRADE-MARK
DRY BATTERY

NATIONAL CARBON COMPANY (INDIA) LTD.

NCC 943

THE AMAZING ACHIEVEMENTS OF RESEARCH

THE ACT OF DILIGENT INVESTIGATION in seeking principles is not new, but from time immemorial Man has been in pursuit of it. An oriental bard has said, "One who seeketh, achieveth, his will."

In Treta Yuga when Sri Laxmana fell into a state of coma being struck by the "Saktiban" of Meghnad, the son of Ravana, and Shri Ram Chandra was much perturbed over him, Hanuman had to go in search of Amaranth (Sanjivani Booti-life giving Herb) to bring Shri Laxmana back to life. Hanuman succeeded in his quest, which ultimately brought the stupendous victory to Shri Rama and Laxmana in the battle of Lanka.

In the great battle of Life & Diseases this Scientific age of ours too, is striving to redeem the suffering mankind from the clutches of Disease through its untiring experiments and researches and achieving success in the Herculean task of saving the world through continuous search for antidotes.

The Dabur (Dr. S. K. Burman) Ltd., too, for the last seventy-two years has been engaged in analysing and manufacturing the Ayurvedic as well as patent medicines through her ever-zealous researches in the most modern and scientific methods and thus becoming the pioneer and guide to the makers of successful medicines.

The cause of immense popularity, which the Ayurvedic and patent medicines processed at Dabur Manufactory enjoy, is the ultimate fruit of her pains-taking researches, utter cleanliness and her most modern scientific ways of producing medicines.

As a result of this ardent quest of principles the Dabur Company has attained the status as one of the best Indian manufacturers of medicines.

DABUR (DR. S. K. BURMAN) LTD. CALCUTTA-29

Manufacturer of most effective Ayurvedic & Patent Medicines

CALCUTTA

Welcomes the Guests, Delegates and Members of the Indian Public Health Association on the occasion of its Inauguration in this Historic City on this day of 28th September, 1956.

CONTENTS

		PAGE
	Messages ...	i—iv
I.	What is Calcutta? ... by DR. S. C. SEAL, Calcutta.	1
II.	History of Public Health in India (Chronology of development) by DR. K. C. PATNAIK, Calcutta.	20
III.	History of Medical Education in India ... by DR. S. C. SEAL, Calcutta.	24
IV.	Training of Auxilliary Health Personnel ... by DR. S. C. SEAL, Calcutta.	35
	(1) Dental Education.	
	(2) Training of Pharmacist.	
	(3) Nursing Education.	
	(4) Public Health Nursing Education.	
	(5) Training of Health Visitors.	
	(6) Training of Midwives.	
	(7) Training of Dai.	
	(8) Training of Vaccinators.	
	(9) Training of Sanitary Inspectors.	
	(10) Training of Laboratory Technicians.	
	(11) Training of Medical Social Worker.	
	Social and Preventive Medicine ... by DR. DONALD T. RICE, Ludhiana.	44
	Nursing Education ... by MRS. U. GUPTA, Calcutta.	46
	Health Education ... by courtesy of DR. MOREY R. FIELDS, Calcutta.	48
	Population and Health Statistics (Illustrated) ... by S. C. SEAL & P. M. ROY. (data supplied by D. G. H. S. Office, New Delhi).	48
	Health of the Armed Forces ... by COL. N. D. P. KARANI, Armed Forces Medical Service.	57
V.	Population Trends and Family Planning ...	58
	(i) Indias' Future Population—by DR. C. CHANDRASEKARAN, Calcutta.	
	(ii) Family Planning—SMT. DHANAVANTI RAMA RAU, President Family Planning Association of India, Bombay.	
VI.	Medical Geography of India—by DR. S. C. SEAL, Calcutta ...	62
VII.	Notes on some Special Diseases:	
	(1) Trends in Tuberculosis control—by DR. P. K. SEN, Calcutta.	
	(2) Venereal Diseases in India—by DR. R. V. RAJAM, Madrsa.	
	(3) Filariasis Problem in India—by DR. P. SEN, Calcutta.	
	(4) The Problem of Nutrition in India—by DR. V. N. PATWARDHANA, Coonor.	
	(5) Role of Iodine in endemic goitre—by DR. K. MITRA, New Delhi.	
	(6) Cancer Problem in India—by DR. SUBODH MITRA, Calcutta and DR. S. DAKSHINAMURTY, Vishakhapatnam.	
VIII.	Maternity & Child Health Programme ... by DR. (MRS.) MUKTHA SEN, Calcutta.	83
IX.	School Health Services in India ... by DR. S. R. SENGUPTA, Calcutta.	85
X.	Environmental Hygiene—by DR. T. R. BHASKARAN, Calcutta ...	89
XI.	Industrial Health in India—by DR. M. N. RAO, Calcutta ...	92
XII.	Prospects of growing and manufacturing vegetable drugs in India by DR. K. BISWAS, Calcutta.	94
XIII.	Medical Research and Public Health Practice ... by DR. C. G. PANDIT, New Delhi.	98
XIV.	Medical and Public Health Research Institutes in India ...	99
	(1) Indian Council of Medical Research—by DR. C. G. PANDIT, New Delhi.	
	(2) Haffkine Institute, Bombay—by DR. D. W. SOMAN (Director).	

CONTENTS—(*Contd.*)

PAGE

(3) Central Research Institute, Kasauli—by LT.-COL. M. L. AHUJA (Director).
(4) The King Institute of Preventive Medicine, Guindy—by DR. S. GOVINDARANJAN (Director).
(5) Production and Distribution of B.C.G. vaccine—by K. S. RANGANATHAN, Guindy.
(6) School of Tropical Medicine, Calcutta—by DR. R. N. CHOUDHURI (Director).
(7) Laboratories of the Serological and Chemical Examiner, Govt. of India, Calcutta—by K. V. VENKATARAMAN (Director).
(8) Malaria Institute of India—by COL. JASWANT SINGH (Director).
(9) Nutrition Research Laboratories, Coonor—by DR. V. N. PATWARDHAN.
(10) All India Institute of Hygiene & Public Health, Calcutta—by Director.
(11) Central Drug Control Laboratory, Calcutta (Compiled by DR. S. C. SEAL).
(12) Central Drug Research Institute, Lucknow—by DR. B. MUKHERJEE (Director).
(13) Central Food Technological Research Institute, Mysore—by DR. V. SUBRAMANYAN (Director).
(14) Institute of Child Health, Calcutta—by DR. *K. C.* CHAUDHURI, Director.
(15) Indian Institute for Biochemistry & Experimental Medicine—by DR. J. C. ROY (Director).
(16) Central Food Laboratory, Calcutta—by DR. *A. R.* SUNDARARAJAN, Calcutta.
(17) Bengal Immunity Research Institute, Calcutta—by DR. U. P. BASU (Director).
(18) Antirabic treatment and Pasteur Institutes in India (Compiled by DR. S. C. SEAL).
(i) Pasteur Institute, Kasauli.
(ii) Pasteur Institute of South India, Coonor.
(iii) Pasteur Institute and Medical Research Institute, Shillong.
(iv) Pasteur Institute, Calcutta—by DR. J. BANERJEE (Superintendent).
(19) The Pimpri Penicillin Plant (Government of India)—(Compiled by DR. S. C. SEAL).
(20) All India Institute of Mental Health, Bangalore—by DR. M. V. GOVINDASWAMY (Director).

XV. Health Services in the First and Second Five Year Plans ... 142
by DR. T. LAKSHMINARAYAN (Adviser).
Second Five Year Plans—Illustrated 144
DR. S. C. SEAL and P. M. ROY, Calcutta.

XVI. Health Services and the Community Development Programme ... 147
by COL. BARKAT NARAIN (Adviser).

XVII. International Health Organisations:
(i) W.H.O.'s Role in India—by COL. C. MANI (Regional Director of South East Asia).
(ii) Work of the Rockefeller Foundation in India—by DR. M. C. BALFOUR, Associate Director, The Rockefeller Foundation of New York, New Delhi.
(iii) The Indo-American Health and Sanitation Programme—by DR. JOHN C. HUME (Chief Health Director, TCM, New Delhi).
(iv) Health Community Development—by DR. HUGH LEAVELL consultant Ford Foundation, New Delhi.
(v) United Nation International Childrens Emergency Fund—MR. T. C. DAVIES, Chief of UNICEF Area Office.

CONTENTS—(*Contd.*)

PAGE

XVIII. Social Welfare Organisations:
(i) Hind Kust Nivaran Sangh—by SRI T. N. JAGADISHAN. (Organising Secretary).
(ii) Central Social Welfare Board—SRIMATI DURGABAI DESHMUKH (Chairman).
(iii) Health Activities of Bharat Sevak Samaj—SRI A. N. DUGGAL (Adviser Sanitation, New Delhi).
(iv) Indian Red Cross Society—SARDAR BALWANT SINGH PURI, New Delhi.
(v) Indian Conference of Social Work—MRS. S. DASTUR PATEL, Assistant Secretary, Bombay.

XIX. Health Legislation in India—by DR. K. S. VISWANATHAN, Calcutta 176

XX. Health Services in the States:
(1) Health Services in the Bombay State—by Director.
(2) Health Services in Madhya Pradesh—by Director.
(3) Health Services in Hyderabad—by Director.
(5) Health Services in Rajasthan—by Director.
(5) Health Services in West Bengal—by Director.

XXI. Medical and Public Health Organisations:
(1) Indian Medical Association—(Activities in 1955)—by DR. A. P. MITTRA (General Secretary, Delhi).
(2) Tuberculosis Association of India—by DR. P. V. BENJAMIN, Adviser, Government of India, New Delhi.
(3) Indian Public Health Association—by DR. S. C. SEAL, Calcutta.

CHAIRMEN OF SCIENTIFIC SESSION PANELS

DR. B. C. DASGUPTA,
Ex-Director of Health Services,
West Bengal.

SRI P. C. BOSE,
Chief Engineer, Public Health,
West Bengal.

DR. M. R. FIELDS,
Visiting Professor (W.H.O.),
Health Education,
All India Institute of Hygiene
and Public Health, Calcutta.

COL. BARKATNARAIN,
Adviser Health,
Ministry of Community
Development,
New Delhi.

Messages:

TOKYO,

The 15th September, 1956

I am very happy to send my good wishes to the Indian Public Health Association on the occasion of its inauguration. The establishment of such an all embracing association is an important landmark in the history of development of public health in India. This association with its unlimited and unique opportunities is expected to play a very important role both in helping the science of public health and the people of the country particularly those living in rural areas. The journal which the Association is bringing out on the eve of its inauguration will, I am sure, reduce the gap between the knowledge and practice of public health by disseminating public health knowledge amongst thousands of workers in the field.

I shall be watching with interest the progress and achievements of this Association in the shaping of the future health of the nation.

I wish the Association a successful career.

B. C. ROY.
Chief Minister,
West Bengal.

Specialities

CALAMINOL.
(Efficacious in Eczema)

CASTELLANI'S PAINT.
(For mangoetoe, athlete's foot, etc.)

DERMOTAR.
(For dry Eczema)

KERASOL.—(Corn Cure)

LEUCODERMOL.
(For Leucoderma)

PRICKLY HEAT POWDER.
(For Prickly heat and other Saborrhoeic conditions)

SOLU-RESORCINOL.
(An ideal hair tonic)

TRIPLE DYE.
(For burns, cuts, etc.)

THIOSOL.
(For Prickly heat, blemishes on the face, etc.)

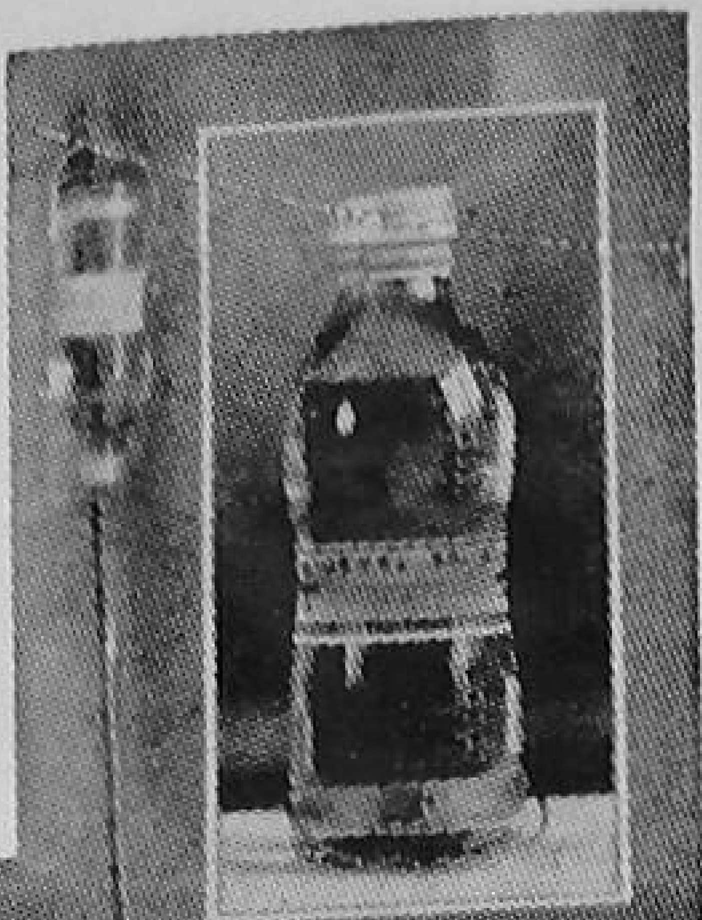
THIOTAR.
(For Tinca Versicolor, Seborrhoeic lichen, Psoriasis, etc.)

GLUCOSALINE

5% Glucose in Normal Saline (*Pyrogen-free*) For intravenous, intramuscular hypodermic or rectal administration.

Indicated in :
Hæmorrhage, shocks, loss of fluid, toxæmia and other emergency conditions.

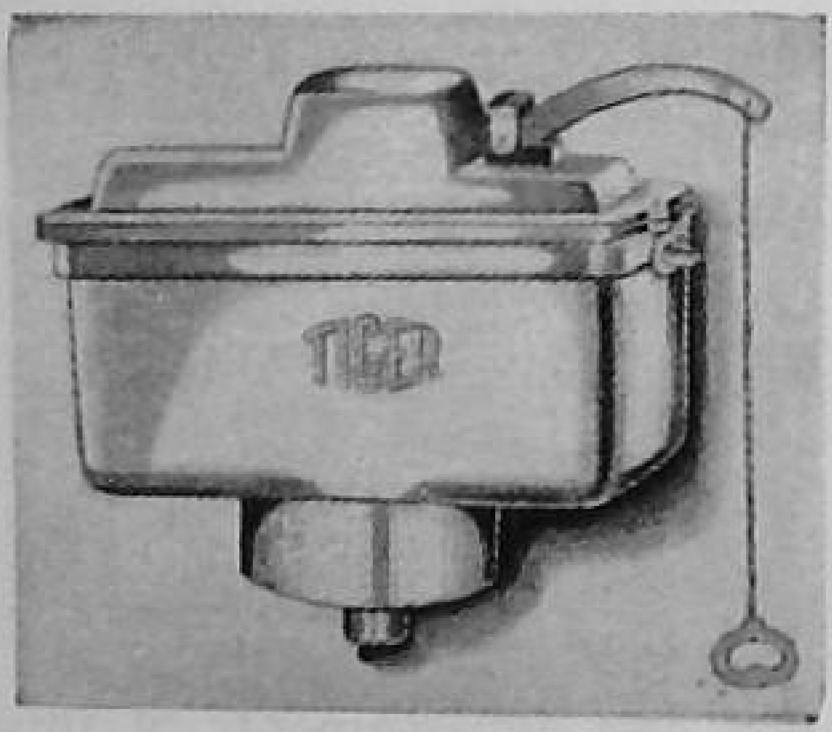
AVAILABLE IN 540 C. C. TRANSFUSION BOTTLES.
Inquire for other Transfusion Products.



'Phone: 34-2674. 'Gram: "PASLAB"

PASTEUR LABORATORIES PRIVATE LTD.

2, Cornwallis Street, CALCUTTA-6.



GOOD SANITATION KEEPS
YOU HEALTHY & CHEERFUL

FOR

Your healthy home, pleasant Bath Room and decent lavatory, we can help you

by

Our TIGER BRAND CISTERNS, BATHS, BASINS, CAST IRON DRAINAGE PIPES, FITTINGS AND OTHER SANITARY PLUMBING REQUISITES of modern types at a reasonable and competitive rates.

MESSRS. THAKURDASS SUREKA,

40, COLLEGE STREET,
CALCUTTA—12

IMPORTERS : EXPORTERS : MANUFACTURERS

Phone: 34-2461 :: :: Gram: "FLUSHPIPES"

"This message is to convey to you, as chairman, and to your associates and members in the newly organized The Indian Public Health Association, the Greetings and Best Wishes of the American Public Health Association and of our Officers and nearly 13,000 members. The inauguration ceremony and the scientific sessions with an exhibition on 28 September 1956 will be another landmark in public health of significance to many friends of members of your Association here and to people through the World.

We share a common interest—the furtherance of public health. As public health moves toward new frontiers, there is increasing opportunity for the Associations and their members to help and to be parts of progress for the benefit and the happiness of people.

Congratulations on your leadership."

IRA V. HISCOCK,
President
The American Public Health
Association Inc.

WITH THE COMPLIMENTS

OF

RAPTAKOS, BRETT & CO

Private Ltd.,

WORLI, BOMBAY

'Gram : "ADVANIMPEX" 'Phone : 23-3331

ADVANI PRIVATE LTD.

3D, GARSTIN PLACE

CALCUTTA - 1.

Representing

CIECH LTD. : POLAND
PHARMACEUTICAL CHEMICALS

DALMAS LTD. : ENGLAND
SURGICAL PLASTERS

METRİMPEX : HUNGARY
HYPODERMIC NEEDLES SYRINGES

KLIN PRODUCTS : MORVI
SURGICAL DRESSINGS

LYALL WILLIS & CO. LTD : ENGLAND
GROUP OF SURGICAL MANUFACTURERS

BOMBAY CHEMICALS LTD. : BOMBAY
PIP INSECTICIDE DISINFECTANTS

ALSO GLUCOSE, SULPHA DRUGS AND PHARMACEUTICALS.

THE PUBLIC HEALTH approach in medical science has come to stay as a cardinal principle in planning for better health. It is therefore a matter of deep satisfaction that organized medical opinion in India, fully alive to the need for public health orientation of the strategy for the control and eradication of disease, has moved forward to set up the Indian Public Health Association. I offer my felicitations to the sponsors of the Conference and wish to express the hope that the Association will continue to grow from strength to strength and will play an ever greater role in India's battle against disease, thus strengthening automatically the global effort for better health which WHO seeks to promote.

C. MANI,

WHO Regional Director for

South East Asia.

" The success of your Association will depend on how much you pay attention to the health problems of the People in all its aspects. Close co-operation of the People and the medical profession will have to be mobilised by you, if you really wish to make your endeavour a success. Otherwise, it will become a pigeon-holed department of the Government."

A. C. UKIL,

President, National Institute of Sciences of India

and

President, Indian Medical Association.

Hanging Bridge, Delhi.

" In our country where preventable diseases cause the highest morbidity and mortality rates among the teeming population, there has been a lopsided development of the curative side of ill health. I dare say that the Indian Public Health Association with its mouth piece the Indian Public Health Journal will play an increasingly significant part in focussing the attention of the admin[illegible]s and sensitizing the public conscience on the very many pre[illegible] disease problems in the years to come."

R. V. RAJAM,

Director.

INSTITUTE OF VENEREOLOGY,

Government General Hospital,

MADRAS.

HEPAREX

Proteolysed Liver Extract with
VIT. B-COMPLEX

Contains: Besides others, Acetyl Methionine, Betaine Hydrochlor. and Sodium Glycerophosphate.

For nutritional deficiency, macrocytic type of anaemia, Gastro-intestinal and liver disorders, convalescence, etc.
In 4 oz. phial.

DIGEBIN
(Capsules)

Contains: Pepsin, Papain, Diastase, Vit. B1, Vit. B2, Niacinamide, Betaine Hydrochlor. and Sodium Taurocholate.

For correcting hypo-function of the stomach and thus aiding digestion.

In plastic phial of 20 tablets.

Products of

BIRLA LABORATORIES

2, Beerpara Lane, CALCUTTA—30

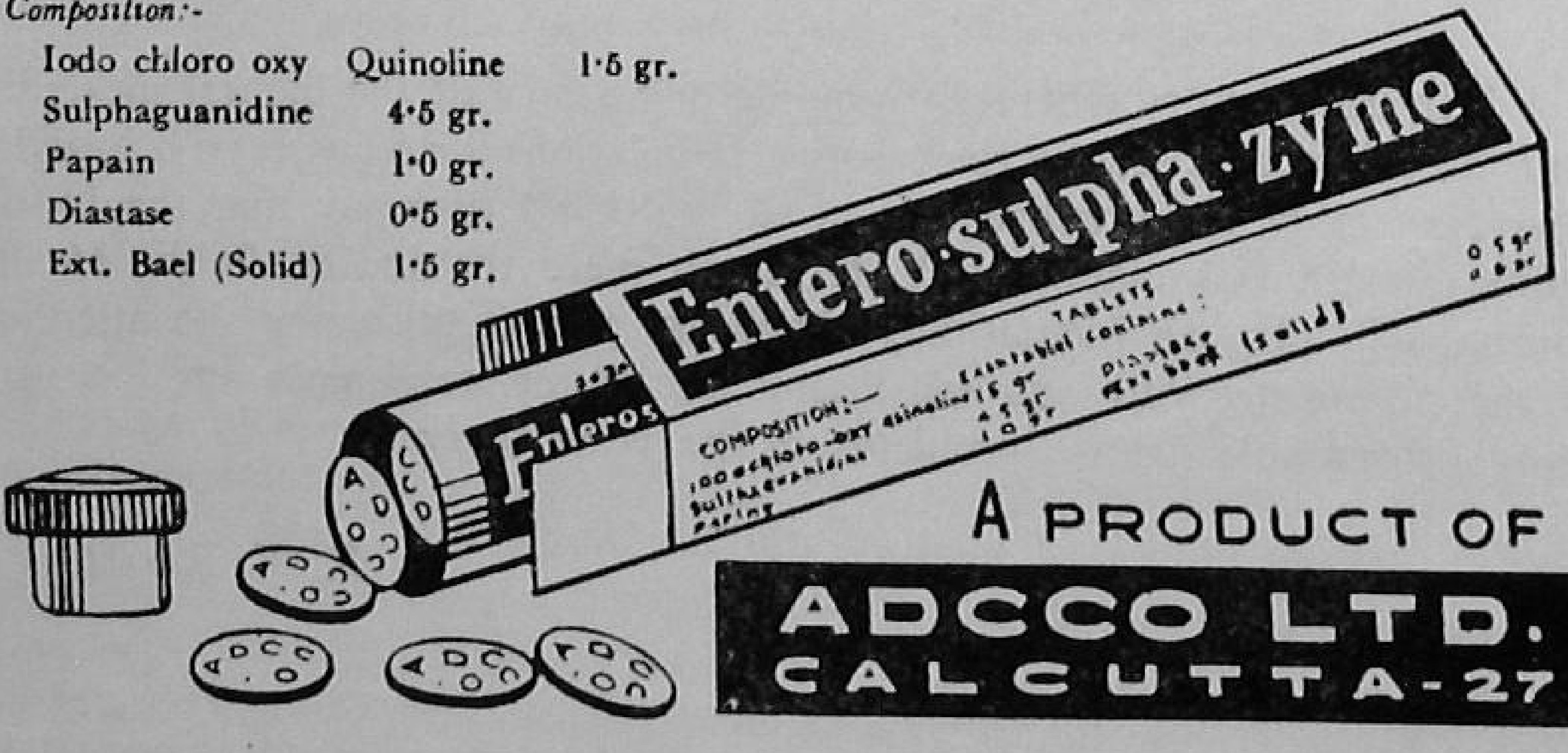
ANNOUNCEMENT

INTRODUCING A SURE REMEDY
For both Bacillary & Amoebic Dysenteries

Entero-sulpha-zyme

Composition:-

Iodo chloro oxy Quinoline	1·5 gr.
Sulphaguanidine	4·5 gr.
Papain	1·0 gr.
Diastase	0·5 gr.
Ext. Bael (Solid)	1·5 gr.



A PRODUCT OF
ADCCO LTD.
CALCUTTA-27

It gives me great pleasure to send this message on the occasion of the inauguration of the Indian Public Health Association.

Recent advance in the fundamental knowledge of basic sciences are being increasingly applied to the sciences and administration of public health in the highly developed countries of the world. The public health service in those countries is in a high stage of development and the results achieved are spectacular as assessed by the morbidity and mortality rate and expectation of life. The public health in our country has not received the same attention as has been given to it in Europe and America. The slow progress in this field has been mainly due to financial reasons and not due to lack of interest on the part of public health workers. Preventive and social medicine forms an integral part of our development plans. In a wider sense, social medicine is being intimately associated with politics and several other welfare activities in the country. With our limited resources, it will not be possible to adopt immediately the best and ideal measures for preservation of the health of the whole population.

In my opinion for the present immediate action which is practicable within our resources is indicated in matters of public health:—

(a) *Education of medical and ancillary personnel:*

Re-orientation of our outlook on medical education is essential. In an underdeveloped country the practice of preventive medicine is more important than the encouragement of curative aid to individuals. It is hoped that our educationists will have a curriculum for the medical education that will suit for country. This should commence in our primary schools and at all social welfare activities. People should know the way to live. This is the duty of the Education/Health Departments. Once a person has learnt his/her lesson, it is for him/her to impart it to his/her children/people.

The declared policy of the country is a welfare state. Medical aid shall have to be provided to a vast majority of the population. If the emphasis as at present remains on curative medicine, the number of medical persons required to man the medical services will be so large that it will take us many many years to produce that number and it would be most uneconomical. The challenge to the profession can be met to a great extent by laying increasing emphasis on preventive medicine on community basis. Once the communicable diseases are controlled or eradicated, the requirements of medical manpower and financial outlay will be automatically reduced, particularly in view of easier means of communication on land and in air. Another important charge against the present day system of medical profession from within and without is that enough attention is not given to social medicine. The role of social and environmental factors in reducing human misery is not being properly appreciated. It is, therefore, very important that both in undergraduate and post-graduate medical education, social relationship of man, i.e. his living conditions, his home and family, work, social adaptation and emotions must receive adequate

attention. I will also stress the importance of developing of spiritual aspect in our medical ethics. I am, however, not one of those who expect only the members of the medical profession to become philanthropists and go out to the farthest villages at no adequate compensation and even to forget their duty to their own families. Medical workers must be given the freedom from anxiety of a living income. Medical education is the costliest and longest of all educational careers and is a very noble one. However, the doctors are also human beings and have their desire to live well for themselves and their dependants, not forgetting their duty to the country and their patients.

(b) *Control of communicable diseases:*

National control programme should be extended to all important diseases that have a country wide distribution or are endemic in certain areas. The environmental sanitation requires improvement both in the rural and urban areas. Considerable amount of research and development in this field is essential before measures are implemented.

(e) *Health Education:*

This subject has not been taken very seriously up till now. There are programmes in the states but it is time that a scientific approach is made to this important problem. Considerable amount of field research will be required and concerted effort can be directed towards this problem on a country wide basis. Implementation of system from foreign country cannot give full dividends. We have to study the beliefs, practice, ideas and even superstitions of the people in various areas with respect to health problems, before evolving suitable methods for influencing their behaviour and attitude in this respect. We have to influence the people by talking to them in their language and for this the local leaders of the community play an important part. Without active co-operation and participation of the people no programme of health education can succeed effectively.

In the Armed Forces, health education forms an integral part of the training which is a continuous pocess through out service. On discharge/retirement, these personnel act as ambassadors of health by setting an example to others in the villages in matters of healthy way of living. These personnel automatically become leaders of the community and their services can profitably be utilised in organisation of the health education programmes in rural areas.

B. CHAUDHURI,

(Lieut-General).

Director-General,

A.F.M.S., New Delhi.

TOWARD A HEALTHY NATION

The successful organization of the Indian Public Health Association calls for hearty congratulations to those leaders in the field of Public Health who have labored hard and long to achieve this forward step. The inauguration of the Association is a fulfillment, and yet it marks the beginning of a new public health era in India.

Recently, under the stimulus of the Five-Year Plans, the nation has recognized the importance of public health and has begun to demand more of the services that our profession is able to give. The field of public health is attracting more and more young men and women. It is an opportune time to gather all interested into this new Association. Through it we can meet and have fellowship with other leaders and workers in the field. Through it we can share our learning from our successes and failures so that more rapid progress can be made. Through it we can support each other in the innovations that are necessary for the full development of our activities.

The other day I was asked to speak on " The Public Health Problem ". One might try to pick out a certain disease with the highest mortality and give to it the dubious honor of being Public Health Enemy Number One. Malaria is a widespread scourge that is being brought under control by the national program. An energetic campaign is being waged against tuberculosis. Through the National Sanitation and Water Supply Program the diseases caused by the lack of these facilities are being attacked. Perhaps we could name other diseases that affect all of India or large sections of it. However, let us look in a different category for " the problem ". I would nominate the *psychological barrier to change* as " the public health problem ".

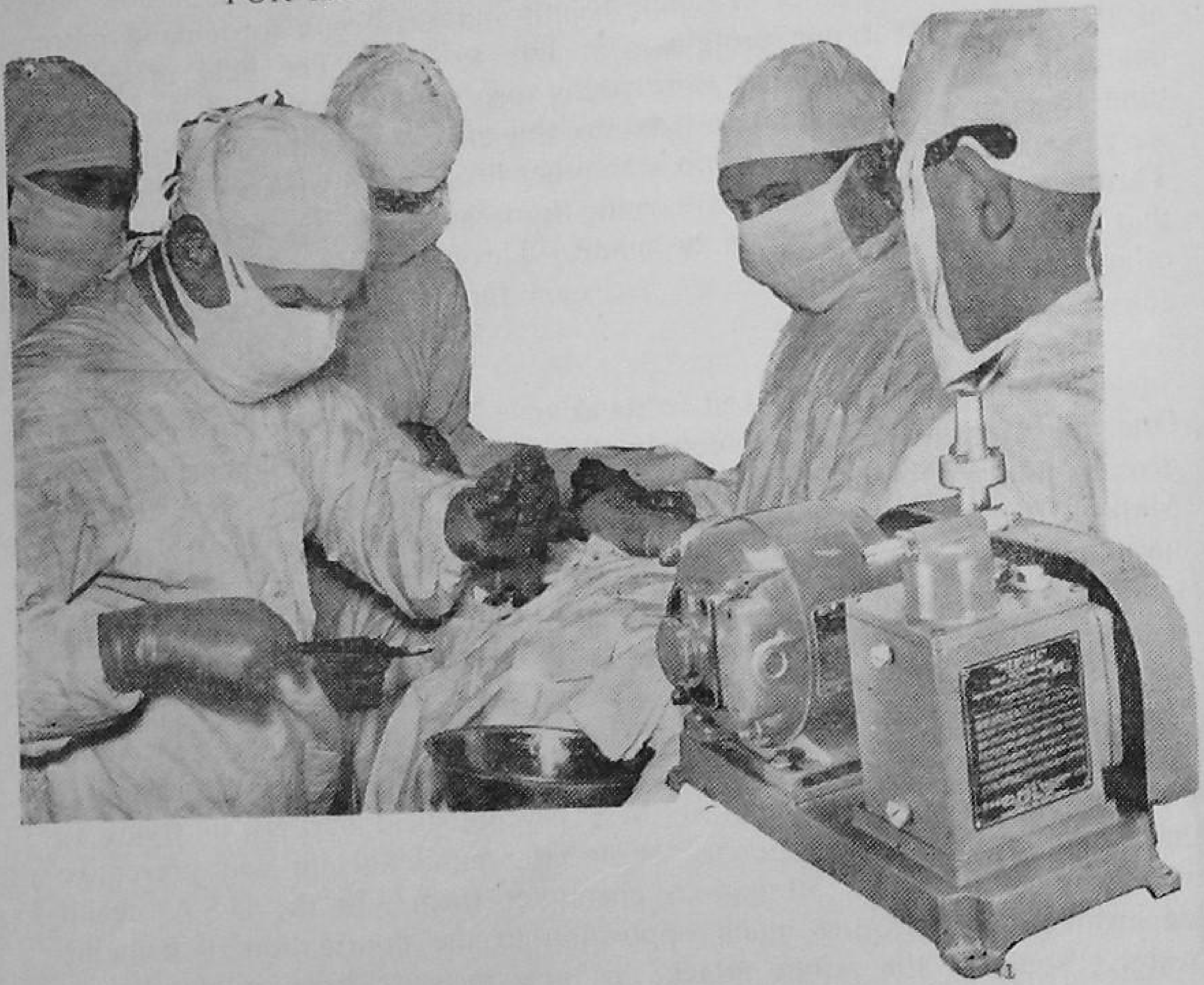
We have all run up against these psychological barriers in trying to implement programs, campaigns, or specific public health and preventive measures. Workers in all nations encounter them. In the U.S.A. health departments are meeting much opposition to the flouridation of drinking water. Some of the public attack this new measure because of religious objections, others because they see in it a threat to civil liberties, a few because they do not consider it economically sound, and some because they have a medical prejudice against it. All of these barriers are in the psychological realm and the problem of overcoming them is tremendous.

In India psychological barriers are numerous and deep-rooted. The people, who are for the most part conservative, and often deprived of the necessities of life and limited in information and stimulation by inadequate communication, cling to the established pattern and resist change. Therefore we, as members of the I.P.H.A., need to do our utmost to solve the problems of the psychological barriers to change that constantly confront us

We look to our health educators to help us untie the intricate psycological knots that we encounter. We can also obtain help from the related fields of Psychology, Sociology, Social Psychology and Anthropology. Utilizing these resources will enable us to educate communities about health

EDWARDS
HIGH VACUUM EQUIPMENT

FOR HOSPITALS AND MEDICAL RESEARCH.



Man's indebtedness to high vacuum technique is strikingly illustrated by its application in medicine and surgery, so diverse now are its numerous and important contributions. A wide choice of vacuum pumping equipment is available to suit the many and varied demands of the hospital and medical research laboratory, e.g. filteration, distillation, blood transfusion draining wounds in the theatre and ward, the removal of mucus and fluids from the eyes, ear, throat and mouth, etc.

Write for illustrated brochure to

THE SCIENTIFIC INSTRUMENT COMPANY LIMITED

ALLAHABAD, BOMBAY, CALCUTTA, MADRAS, NEW DELHI.

and help them to improve in health status. We can learn better and surer ways to stimulate the necessary change in ideas about sickness and its causes, how to improve health habits, how to alter attitudes about disease, and finally, how to give positive health a higher position in the symtem of values of the people of this country.

The success we have in solving problems of the psychological barriers will determine the extent to which public health programs will have lasting success. These programs can then become the programs of the people and not of the health departments alone. This will make them less expensive and more permanent. Take for instance the National Sanitation and Water Supply Program. No matter how many facilities the Government supply or how much money is spent on amenities, the full and efficient use of such facilities will not be made until there is a change within the people, until the psychological barriers are surmounted.

It is encouraging to see that new subjects and new methods are being integrated into our professional schools so that our young doctors and nurses will have a better understanding of public health. The Indian Nursing Council has incorporated much public health into the new Basic Curriculum. The Conference on Medical Education has supported the enlarged syllabus for the teaching of Social and Preventive Medicine. With this added support from the doctors and nurses of the future, public health can make the rapid progress that is necessary for the total development of India. I. P. H. A. ki jai! Public Health ki jai! Bharat ki jai!

DONALD T. RICE,
Christian Medical College
Ludhiana, Punjab.

SEDONAL

THE NEW ORAL TABLET WITH PARENTERAL EFFECT

EACH TABLET CONTAINS:—

Aminophylline	... ...	gr. 3
Aluminium Hydrox. Gel. Dried	...	gr. 4
Phenobarbitone	... ...	gr. $\frac{1}{4}$

for

- CORONARY INSUFFICIENCY
- MYOCARDIAL WEAKNESS
- ASTHMA, BRONCHIAL & CARDIAC
- STATUS ASTHMATICUS
- PULMONARY OEDEMA
- DIURESIS IN CARDIAC & RENAL OEDEMA
- HYPERTENSION

This will also be found useful in conditions characterised by gastric irritability, raised blood pressure, diminished urinary output, and a general tendency to fluid retention in the tissue.

ENTERO-QUINOL

(Iodochloroxyquinoline)

For the treatment of:

Acute, Sub-acute and Chronic

- AMOEBIC DYSENTERY
- INFECTIOUS INTESTINAL CATARRH
- COLITIS
- SUMMER DIARRHOEAS
- INFANTILE DIARRHOEAS, ETC.

Tubes of 20 and Bottles of 100, 250, 500 & 1000 Tablets.

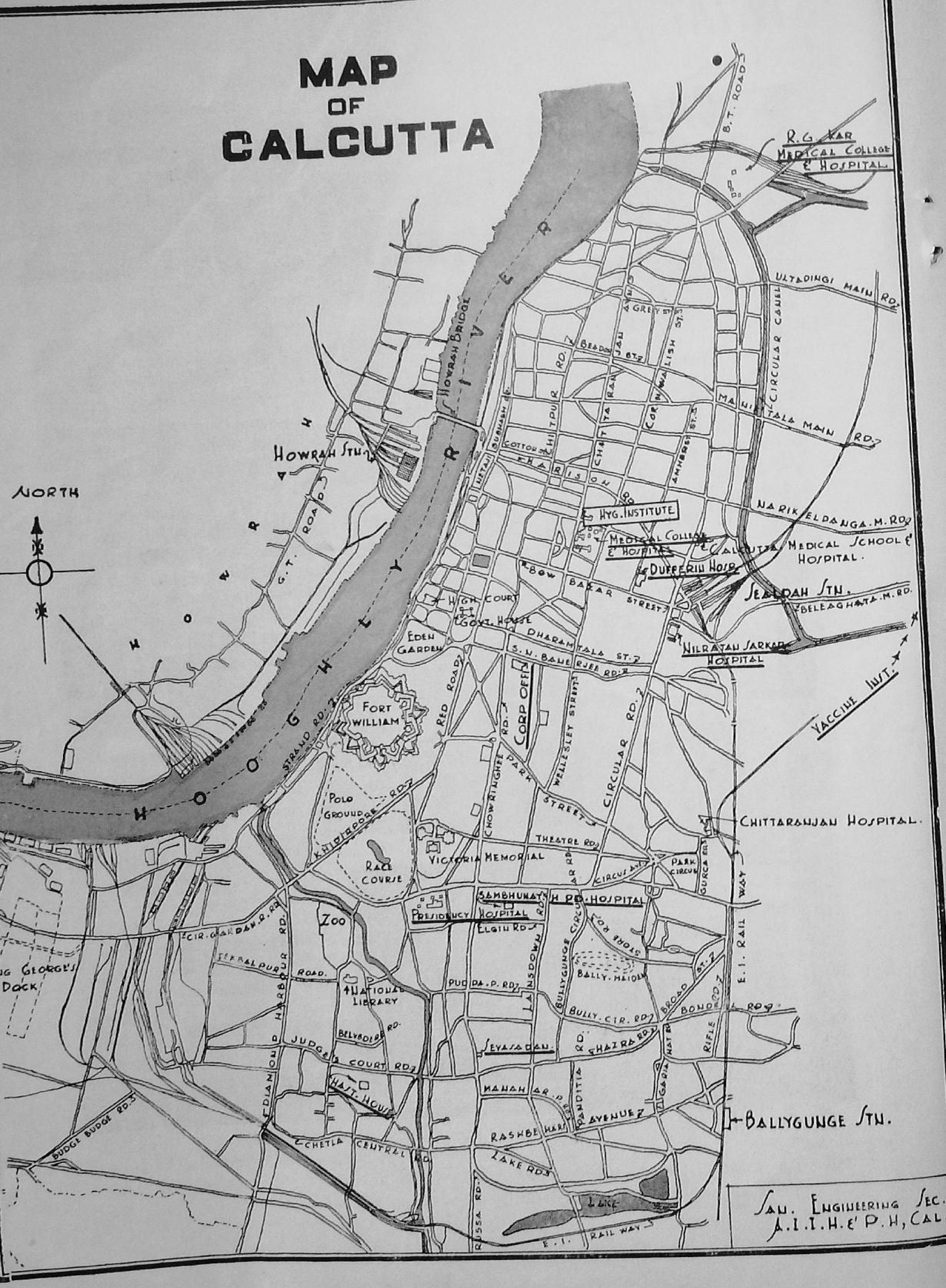
EAST INDIA PHARMACEUTICAL WORKS LTD.

CALCUTTA—26

RAJKUMARI AMRIT KAUR, *Union Minister for Health*

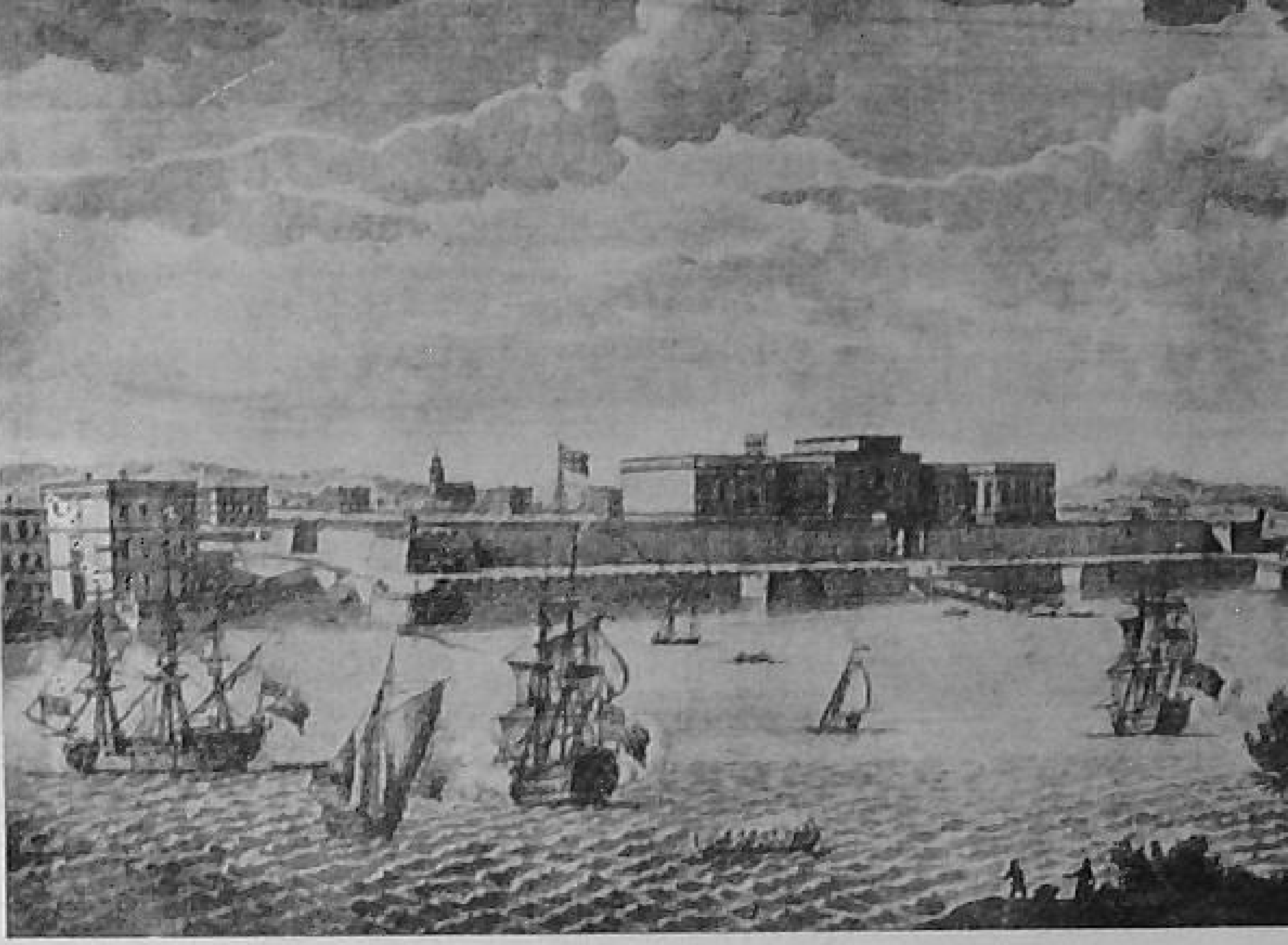
SOUVENIR
INDIAN PUBLIC HEALTH ASSOCIATION
SEPT. 28-1956.

MAP OF CALCUTTA



WHAT IS CALCUTTA !

S. C. SEAL, *Calcutta*



Old Calcutta.

Calcutta, the foremost city in the whole of India owes her name from the Bengali name KALIKATA a village close to the sacred pilgrim centre Kalikhetra or Kalighat in the poems *Manashamangal* of Vipradas (1495 A.D.) and the *Chandikavya* of Kavikankan Mukundarama Chakrabarti (1577 A.D.). It was a *mahal* within the sarkar of Satgaon (soptagram) during Akbar's time (1590 A.D.), suituated by the river Saraswati or famous inland port and centre of trade and commerce in those days. With the silting up of the river Saraswati towards the close of the 16th Century Saptagram lost the importance and Hooghly on the bank of the Ganges took its place as the commercial centre and was exploited by the Portuguese Traders. The imposition of punitive tax by the Moghul king in 1632 A.D. led to the decline of the Portuguese trade and this almost synchronized with the grant of a charter to the English merchants by Prince Shuja for trading in Bengal on payment of Rs. 3,000/- per year.

The English at Calcutta and Job Charnock :

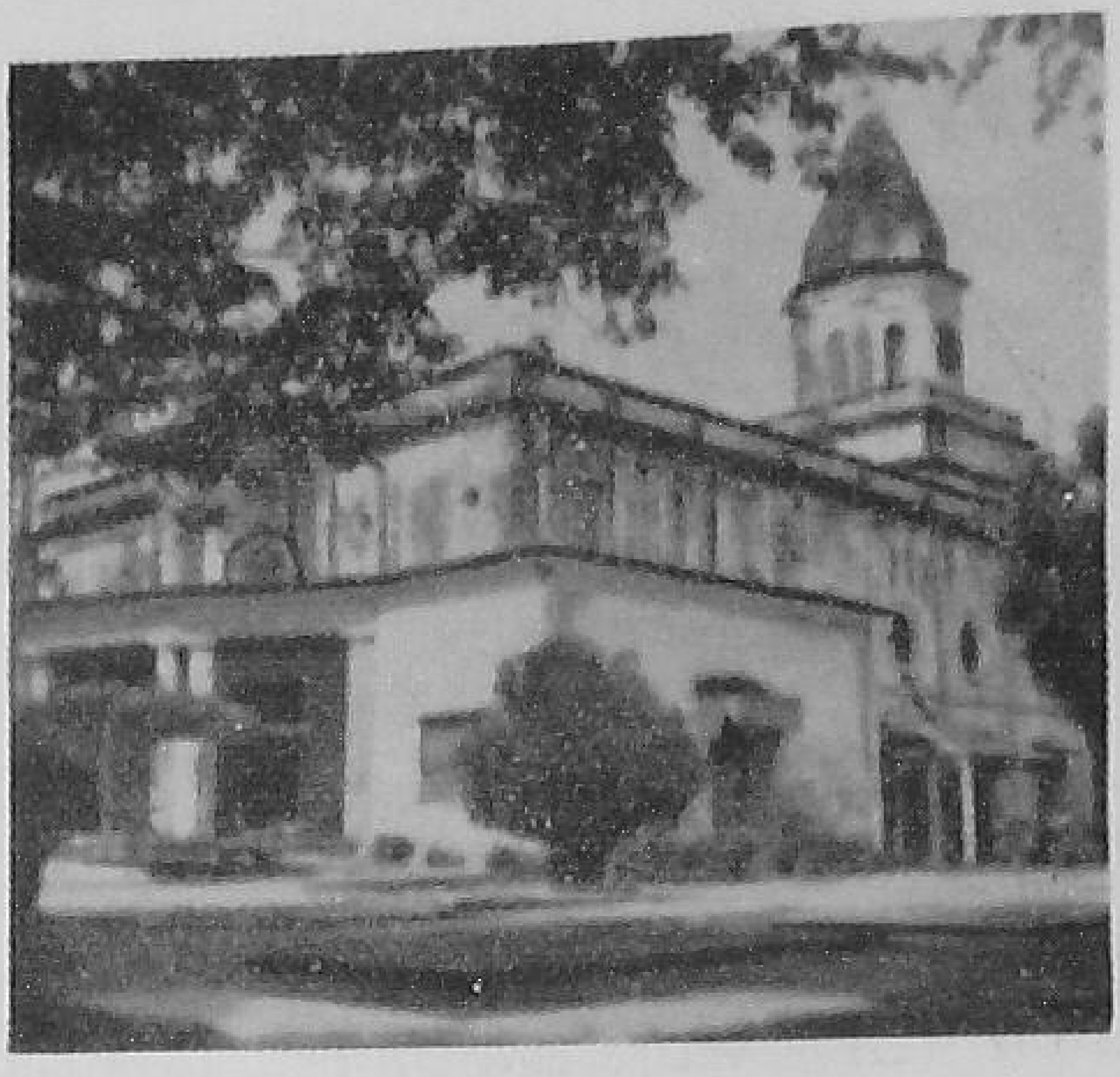
Calcutta was actually an unhealthy swamp and was one of the three villages Sutanati, Kalikata and Govindapur under the company's zemindary. Job Charnock, the then agent of the East India Company established a factory in 1690 A.D. and became its first Governor. To popularize the colony, Charnock gave privileges to the residents and traders, which led to the congregation of the Portuguese, the Armenians, the Hindu and the Muslims in the area within a short period. Charnock died in 1692 and was buried by the grave of his Indian wife. The mausoleum erected over his tomb by his son-in-law is still to be seen in St. John's Church yeard.

Between 1692-1756 :

In 1693 Sir John Goldborough, the chief Governor of the Company's settlements in India built the factory at "Dhe Collecotto" (Dihi Kalikata) the highest price of land by the river Ganges, west of the present site of Dalhousie Square now occupied by the G.P.O., Customs House and East Indian Railway Houses. He fortified it with a wall, which formed the parts of the present Fort William of Bengal named in 1700 after William III, the then reigning British Soverign. Two circumstances which happened about the time namely, the revolt of Sobha Singh of Midnapore in 1696 against the Nawab of Bengal and the appointment of Azim-us-Shan, the pleasure loving grandson of Aurangzeb as Governor of Bengal who in 1698 on consideration of gratification of Rs. 16,000 received from the company permitted them to purchase the three villages mentioned above as the nucleus of the present Calcutta. Although the Emperors *firman* could only be obtained 19 years later due to another lucky incident in the cause of Emperor Farrukhsijan by Surgeon Hamilton of the English embassy—it paved the way for the British to establish firmly in the soil of Bengal and later of India.*

Until the end of 1699 the Bengal establishment was subordinate to Fort St. George, Madras,† when the Presidency of Bengal was created under the Presidentship of Charles Egre. In 1702, the President's House was built and the first writers' building in 1706 on the site of the old factory house. The death of Emperor Aurangzeb in the 1707 brought in a state of general insecurity and the English found in it an opportunity of adding to the fortification. In 1709 the tank in front of the Writers' Building, the present *Lal Dighi* was re-excavated and deepened for the supply of drinking water. The same year the first Church, the Church of St. Anne adjoining the main gate of the Fort William—the Armenian Church—the church of Nazareth the oldest existing church in Calcutta was built in 1724.

The city prospered day by day with the growth of the company's trade and shipping which rose to 10,000 tons a year by the third decade of the last century, but it was not uninterrupted. The terrible storm and earthequake of 1737, accompanied by 15 inches of rainfall within 5 hours devasted the country for about 60 miles up the river Ganges and caused a great deal of damage to Calcutta. No sooner had the city recovered from this calamity than new menace appeared with the depredations of *Marhattus*, which led to the construction of Marhatta ditch in 1742, which starting from the Chitpur end in the north of the city ran along the Circular Road to as far as Jaunbazar Street. This unfinished *Marhatta* ditch remained for nearly 60 years as a pestilential drain and was filled up in 1799 when the Circular Road was built.



Armenian Church.

Sirajuddaulah and the Battle of Plassey :

Alibordi Khan, the Nawab of Bengal died in 1756 and was succeded by his young grandson Sirajuddaulah. The latter looked upon the English as interlopers and viewed with misgivings the extension of the fortification of Calcutta. He particularly resented the giving of shelter to the family of Raja Rajballabh in open defiance to the Nawab's authority and hostilities broke out with the attack of Calcutta by the Nawab's army in June 16, 1756. The fight took place at the site where the British Indian Street is at present situated. The Fort was occupied on June 20, 1756 and the Victorious Nawab remained in the city as Alinagore before leaving for his capital. It was at this time that the so-called *Black Hole Tragedy*, is said to have been enacted but this story has now being discarded as historically untrue.

The fall of Calcutta meant a great disaster to the English and when this news reached Madras an avenging army was sent under Clive and Watson. Although a treaty was concluded with the Nawab on February 9, 1757 restoring the trading privileges of the company a sorbid drama of treachery and intrigue against the Nawab to which Clive joined whole heartedly to turn the situation in favour of the English, and the strained relation between the English and the French brought about by the Bengal war between France and England in Europe precipitated the war between the Nawab and the English, the Battle of Plassey on June 23, 1757. The English under Clive won the battle without much fight through the intrigue of Mir Jaffar, an uncle of Sirajuddaulah, who eventually came to the throne. On January 2, 1757 the British flag was rehoisted on Fort William and its defence further strengthened. The grateful Mir Jaffar made a free gift of Calcutta and the zemindary rights over an extended tract of land from south of Calcutta to Culpee, awarded lavish compensation and granted permission to establish a mint.

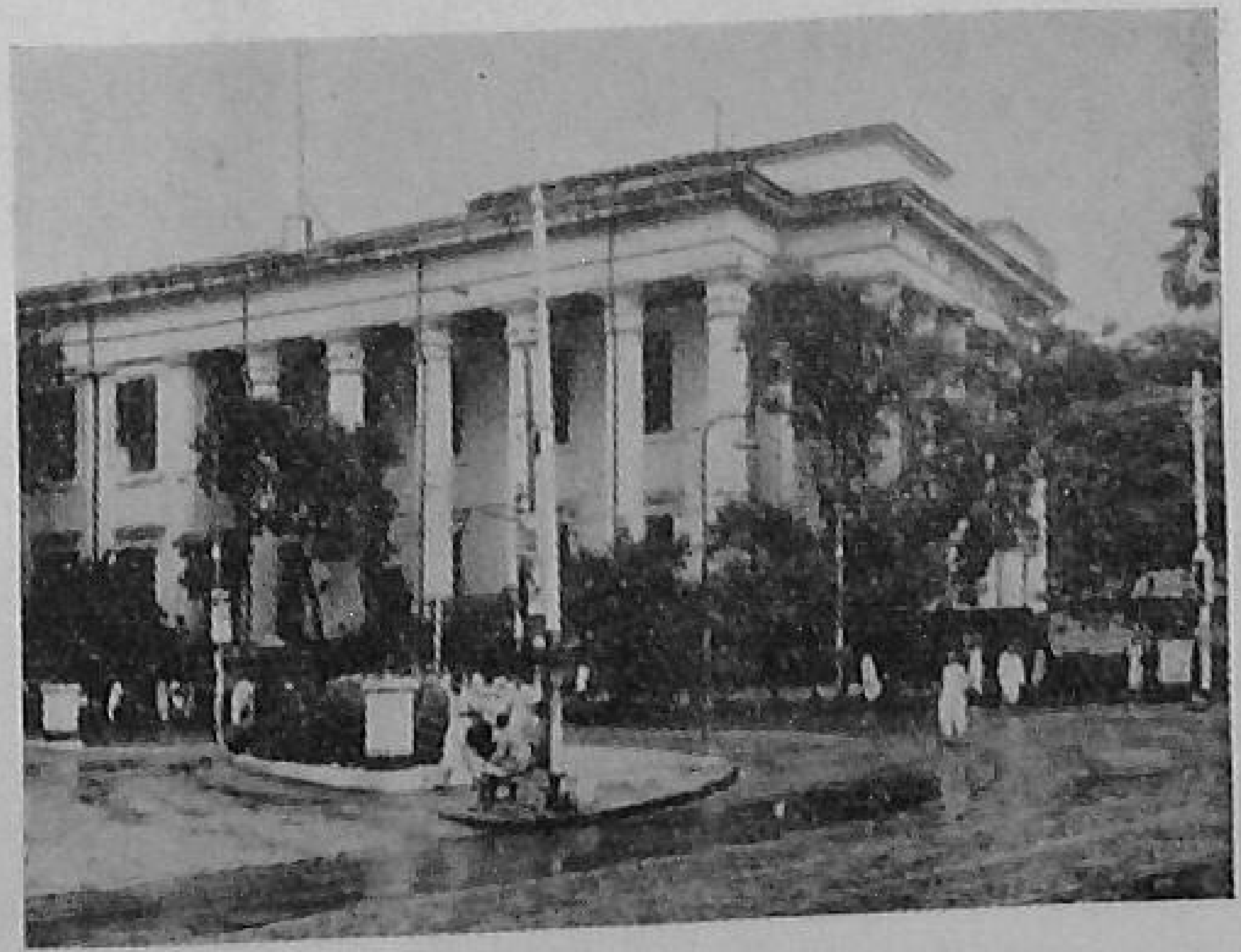
Calcutta after Plassey :

The victory at Plassey gave the English the supreme authority in Bengal and opened the way for further territorial expansion. Calcutta being the headquarters began to expand in area and importance and to prosper almost without interruption since then, except for a little setback following the removal of the capital to New Delhi 1911. The foundation of the present Fort William was laid in 1781 and the *maidan* the most important land mark of the city created at the site occupied by the village Govindapur. Stately office buildings were built, though in a haphazard manner, and palatial garden houses sprang up in the suburbs, such as one at Dum Dum for Clive, another at Alipur for Hastings and quite a number on the banks of the Ganges at Garden Reach and the main European residences came up the Chowringhee. The company soon obtained the Diwany of Bengal, and Orissa of which the English became virtually the ruler. In -114 Calcutta became the metrepolis of the Government of India when the Governor of Bengal became the Governor General with authority over Bombay, Madras and Calcutta.

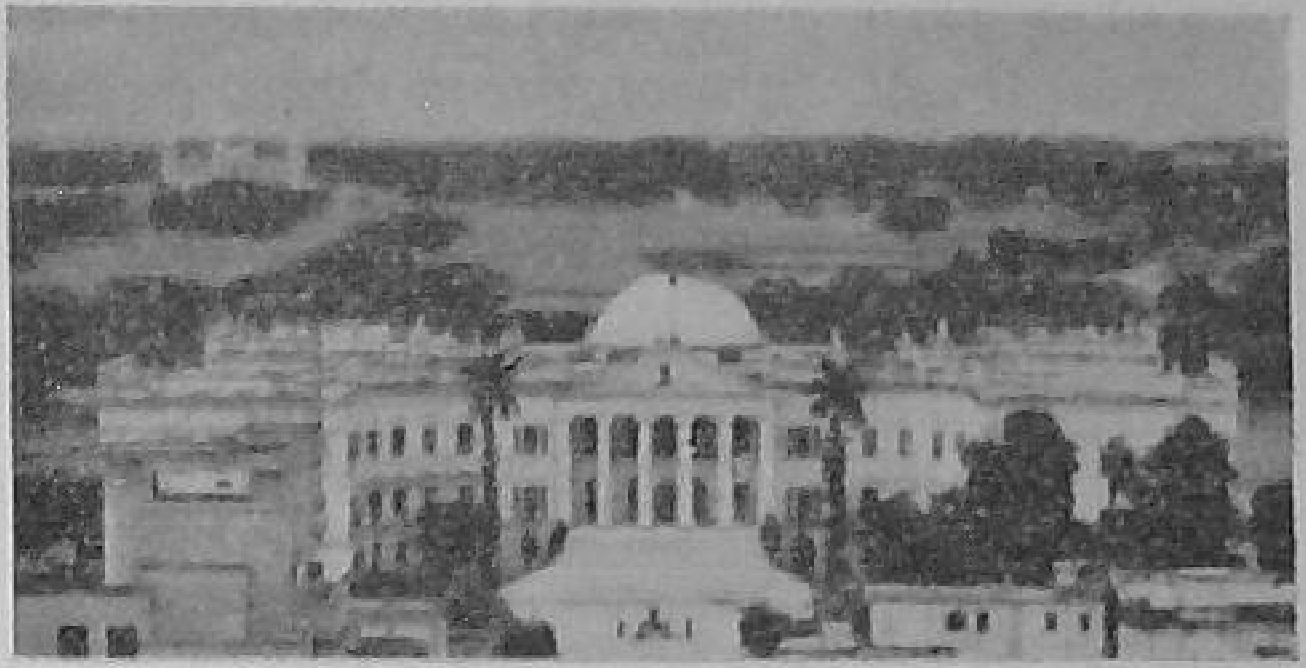
The Supreme Court of Judicature and the Exchequer were established in Calcutta. During the tenure of Office of Warren Hastings she also took the lead in the intellectual sphere also, with the establishment of the Asiatic Society in 1784, which initiated the studies in the humanities and sciences on modern lines and ever since served as the root of all cultural and scientific activities in India. The seeds of the Sibpur Botanical garden were sown about this time and the old Cathedral of St. John was completed in 1787 by money raised by lotteries and state aid and by some unauthorized diversion of state funds by Warren Hastings. Although the administration under him was full of corruption and injustice, he raised the city of Calcutta to a status of foremost preeminence among other cities in India.

Hastings House.

Under Lord Wellesly, the Sultan of the Englishmen, the present Government House was completed in 1802 and to him again the city owes many civic reforms which led to the improved sanitation and increased convenience and comfort of the inhabitants. A desire for improvement of the city became manifest among the public-spirited inhabitants and many of the reforms and new constitutions were brought about by raising funds through lotteries. Thus the foundation of the magnificient Town Hall was laid in 1805 and completed in 1813. In the same year the Company's monopoly in trade was abolished by a charter which encouraged private trading agencies and corporations to increase trade and prosperity of the city. It also brought into existence the Calcutta Trades Association and in 1834, the Calcutta Chamber of Commerce—the forerunner of the Bengal Chamber of Commerce of the present day. The foundation of St. Paul's Cathedral was laid in 1837 and the Cathedral was consecrated in 1847. The Silver Mint was opened in 1831 and the Copper Mint in 1865. Earlier a fine avenue of trees were laid along the river bank from the Chadpal Ghat to the Fort, which was known as Respondation Walk for the Calcutta society to promenade in the cool evening. Much of this old walk has now



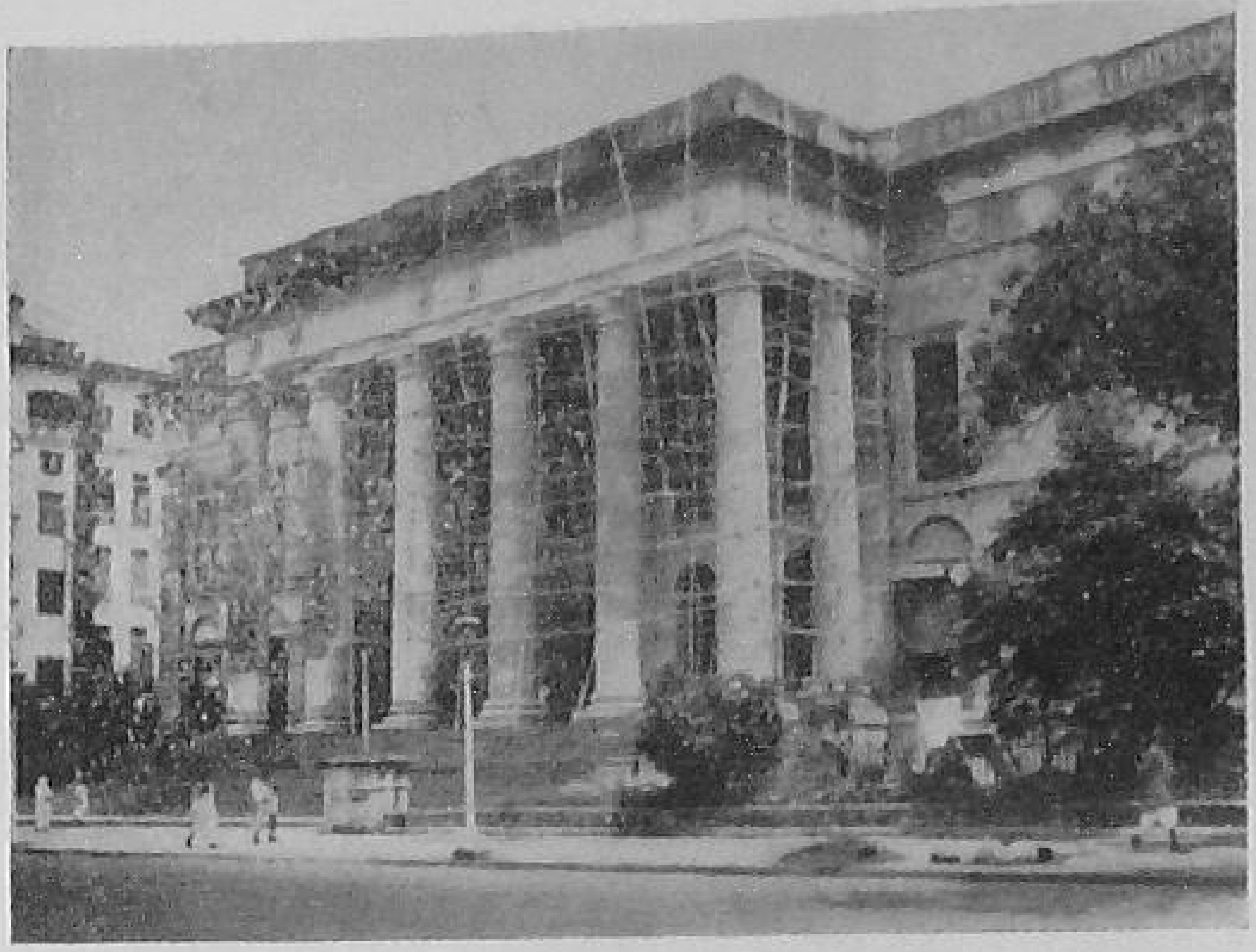
Metcalfe House.



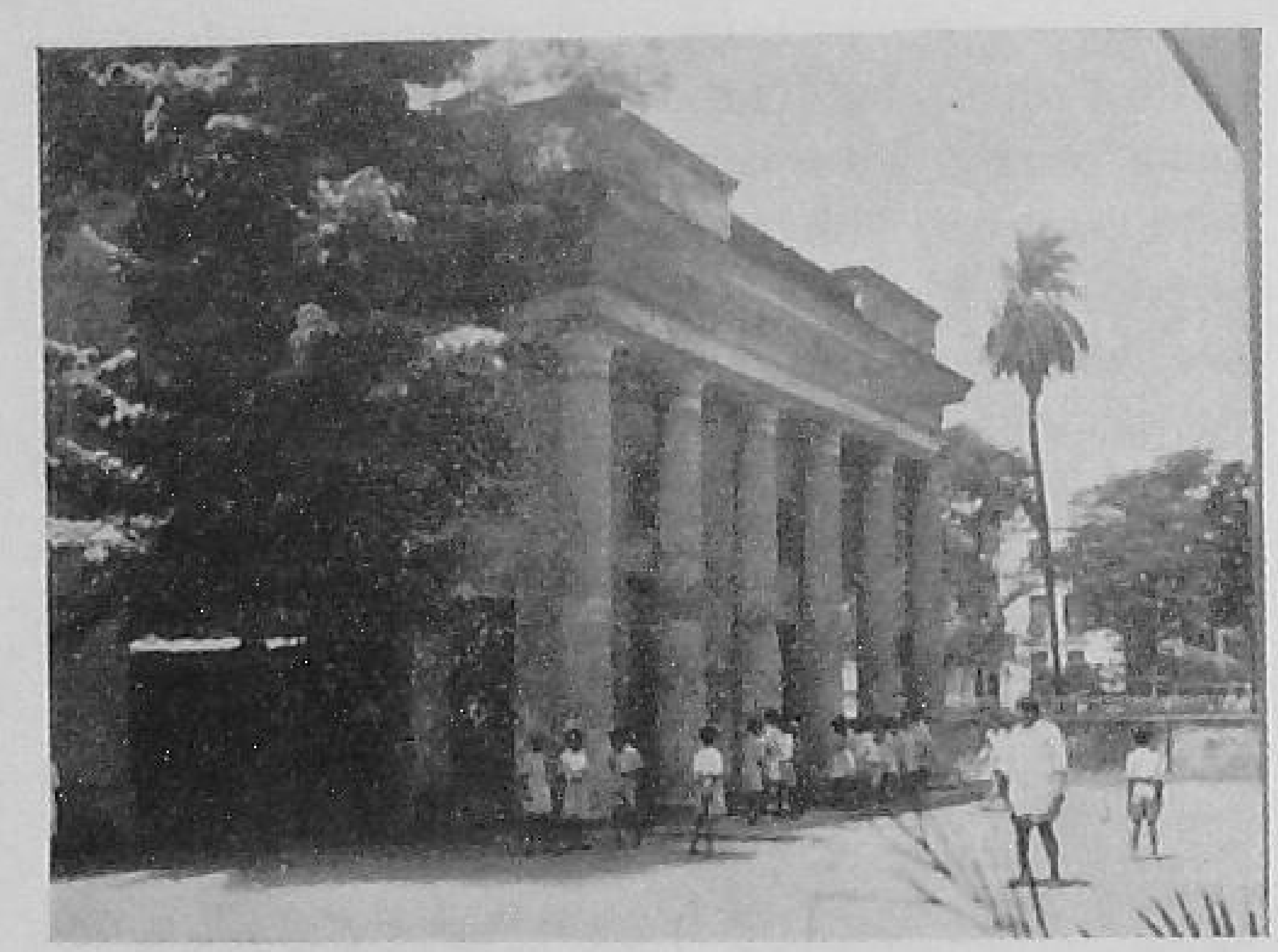
Government House.

Asiatic Society.

been absorbed in the famous Eden Gardens laid out under the direction of Misses Edens, the two talented sisters of Lord Auckland. The Indian Museum which was established in 1814 by the Asiatic Society was transferred to the present building in 1875. The city gradually grew up into a large port and now stands amongst the first ten largest ports in the world, although the navigation is difficult and expensive on account of the shifting shoals and sand banks. The Port is under the control of Port Commissioners which came into exitsence in 1870.



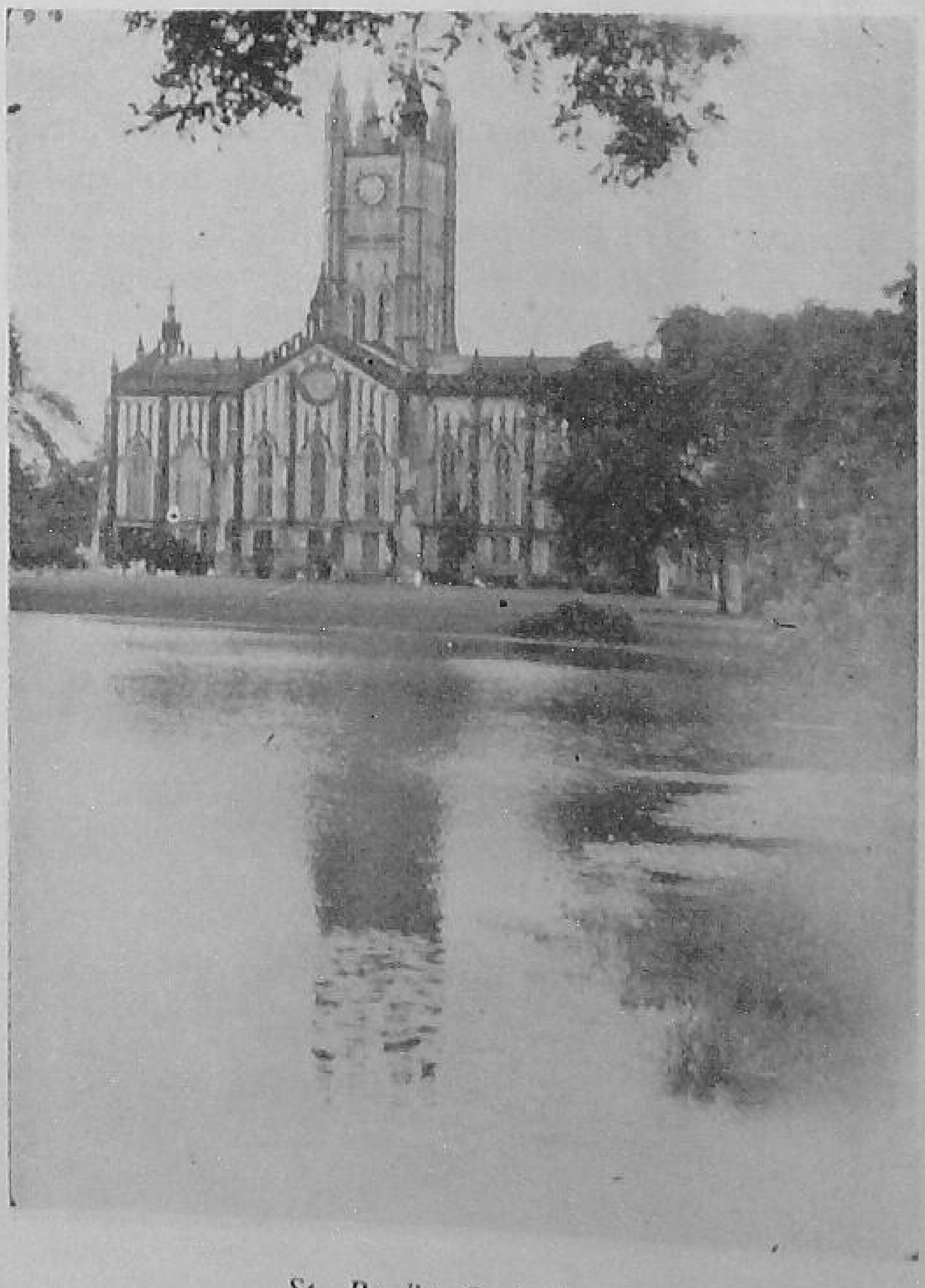
Town Hall.



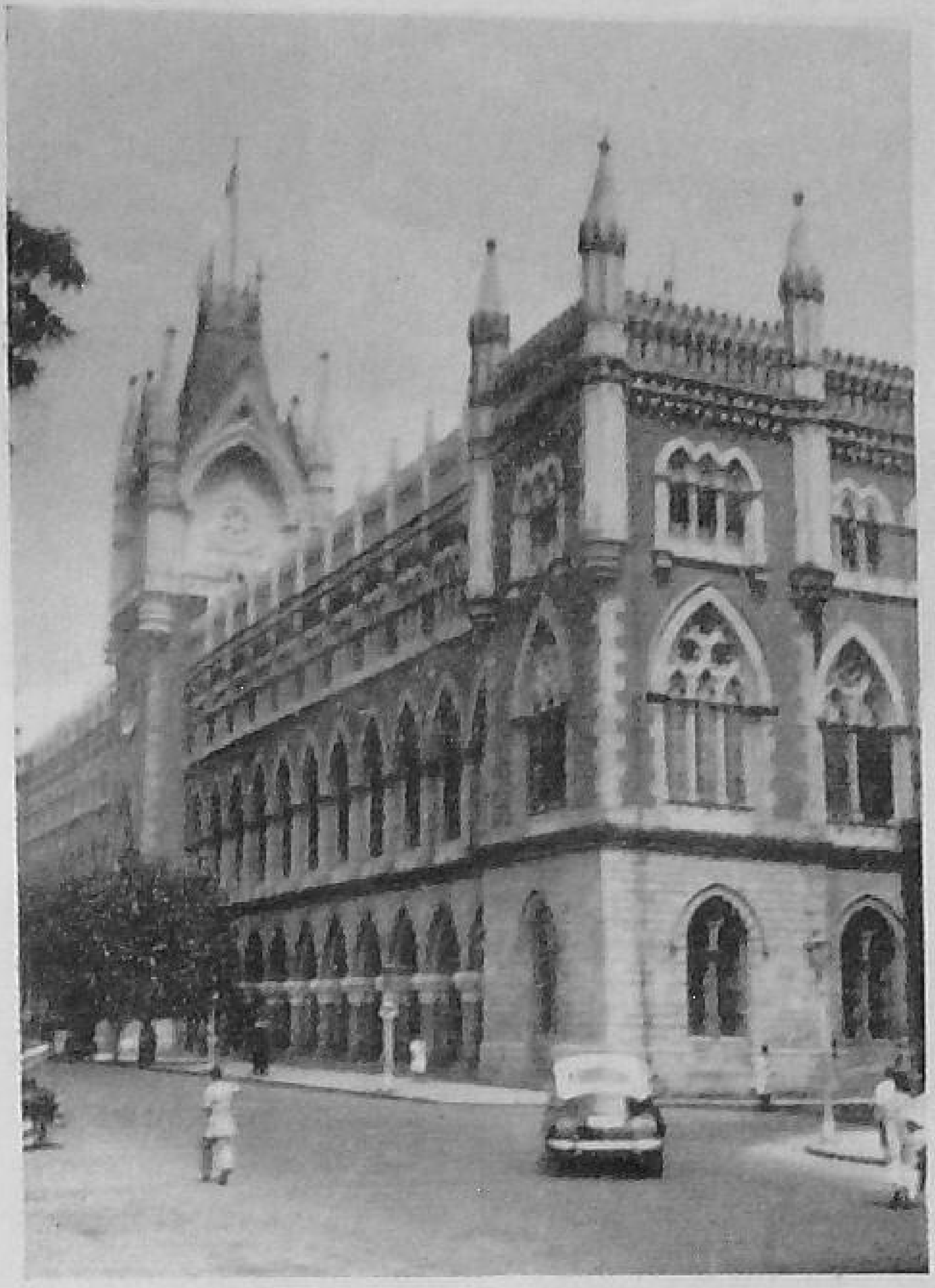
Hindu School.

During the Vice-Royalty of Lord Curzon a fresh impetus was given to the city. The Victoria Memorial, 182 ft. high, started at his instance in January 1906 under the Victoria Memorial Act X of 1903, the foundation being laid in 1906 and the Memorial opened in December 1921. A fund of Rupees 76 lacs was raised by public donation for this purpose. The Calcutta Improvement Trust was formed in 1912. This body changed the face of Calcutta by laying out broad street like the Central Avenue, New Park Street, New Theatre Road, Russa Road Extension, Rash Behari Avenue, Southern Avenue, etc. they have provided the city with many open spaces and parks (lung spaces) and the beautiful Dhakuria Lake which has helped the growth of rowing and swimming clubs. The city is now expanding in leaps and bounds and many new magnificient and high topped buildings such as the Guptu Building, Victoria House, Mackenzie House, Central Telephone Bhavan, the New Secretariat, and many others. The industrial district of Howrah with its busiest Railway station stands on the opposite bank of the river Ganges which is now spanned by a modern bridge of the latest type facilitating communication.

The city is now served by two main railway stations, at Howrah and Sealdah and several suburban stations. The Port Commissioners the Calcutta Corporation have its own railways. The four main trunk roads, are the Grand Trunk Road, the Barracpore Trunk Road, the Diamond Harbour Road and the Jessore Road. The city



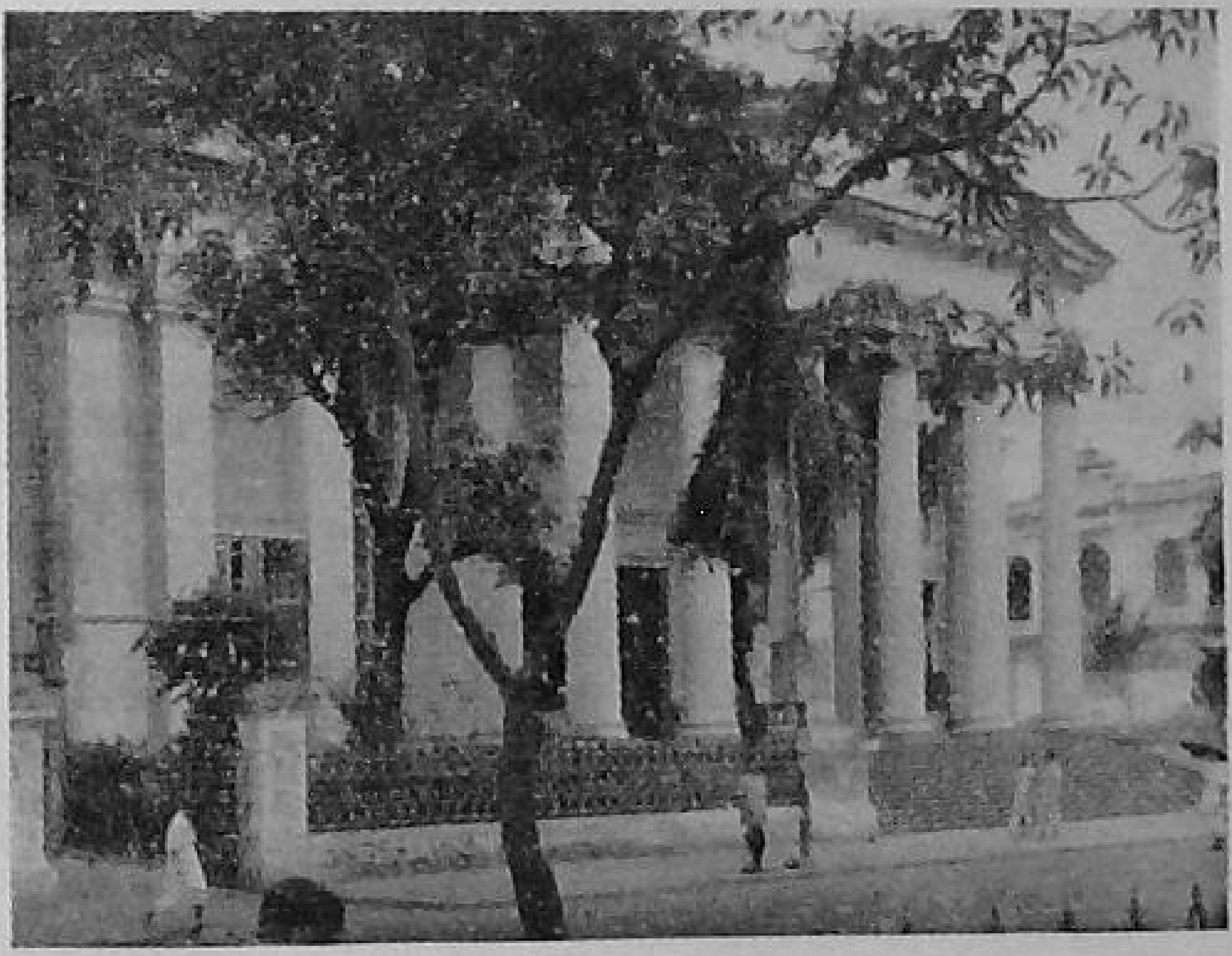
St. Paul's Cathedral.



High Court.

Medical College

The first impact of the western influence fell upon Calcutta and the rest of Bengal. New ideas and new thoughts began to appear in various ways—religious, social and cultural. In the first half of the 19th century Raja Ram Mohan Roy started the Brahmo Samaj. This new religious system was at the root of several



Senate House.

reformist movements, social, intellectual as well as political. Ram Mohan championed the move for the abolition of *Suttee* and Pandit Iswar Chandra Vidyasagar advocated abolition of polygamy and remarrhiage of widows, and through his initiative the widow remarriage act of 1856 was passed and polygamy is practically unheard of now-a-days in the Hindu Society (A law has also been recently promulgated). With Calcutta are also associated the hallowed names of Ramkrishna Paramhansa, Swami Vivekananda (the latter inspiring a world wide humanitarian organisation, the Ramkrishna Mission), Bankhim

has now one of the largest national and international Air Port of the World at Dum Dum, the average number of air crafts including the night air mails service exceeds 4,000 per month. The city's population now exceeds 3 millions and is rising at a pace causing difficulties in every sphere of city life.

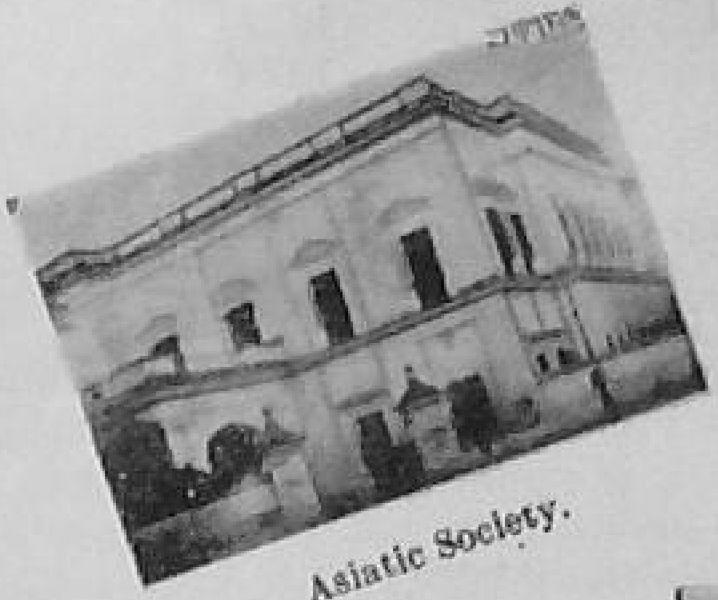
Calcutta—Birth place of Indian Nationhood and Cradle of Independence :

Mint.

Chandra Chatterji, Keshab Sen, Aurobinda Ghosh, Rabindra Nath Tagore, Asutosh Mukherji, Chittaranjan Das, Subhas Bose and many others. Though comparatively young as a city, Calcutta possesses an immense love of arts and paintings of the last several centuries preserved in the Indian Museum, Victoria Memorial, Marble Palace, Asiatic Society and in the personal collections of her many rich citizens. She took the load in spreading western education. The university of Calcutta was established in 1857 following which many educational, research, cultural and political institutions came into being and made important contributions to the advancement of knowledge and to the Indian Nationhood and Independence. It was at Calcutta that the first political consciousness was aroused and the establishment of the British India Association in 1851, the Indigo movement, the Indian Association in 1876, the Indian National Congress in 1886 paved the way for the various movement which ultimately brought liberation of the country from the British Yolk. Gokhale's "What Calcutta thinks to-day, India thinks tomorrow" is still true to-day. In fact the city has been the birth place of all advanced ideas in the country. It was at Calcutta that the national scientific organisations like the Indian Science Congress, the National Institute of Sciences of India, the Indian Medical Association and many others were born and now the Indian Public Health Association.

National Library.

Victoria Memorial.

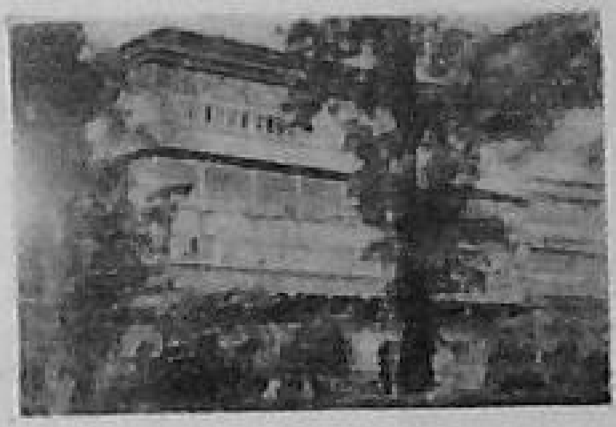


Asiatic Society.

Baker Laboratory, Presidency College.

Institute of Nuclear Physics.

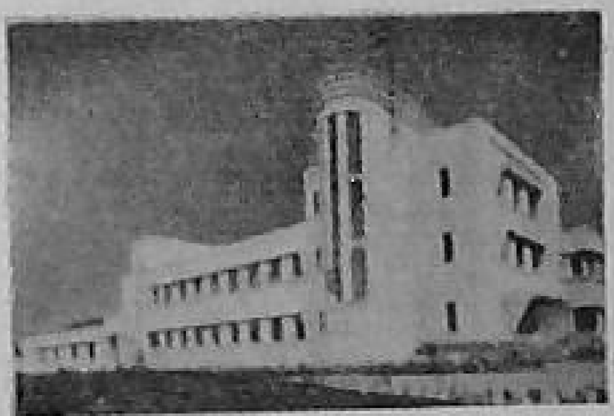
University College of Science and Technology (Upper Circular Road).



University College of Science and Technology (Ballygunge).

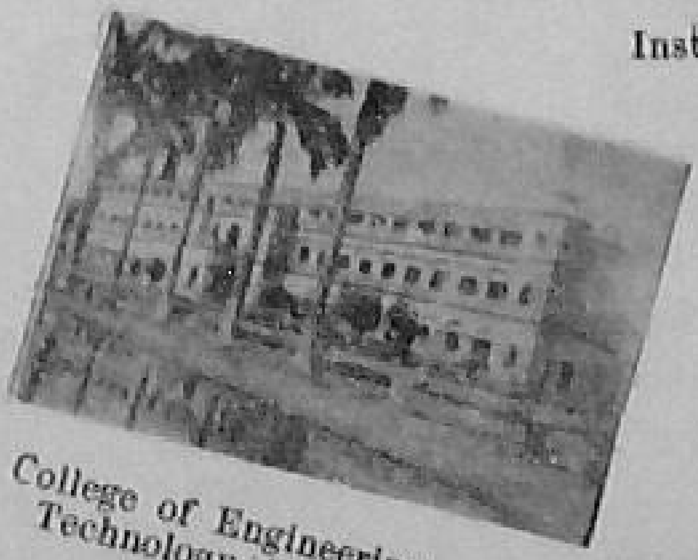
Indian Association for the Cultivation of Science (Jadavpur).

Bose Institute.



Central Glass and Ceramic Research Institute.

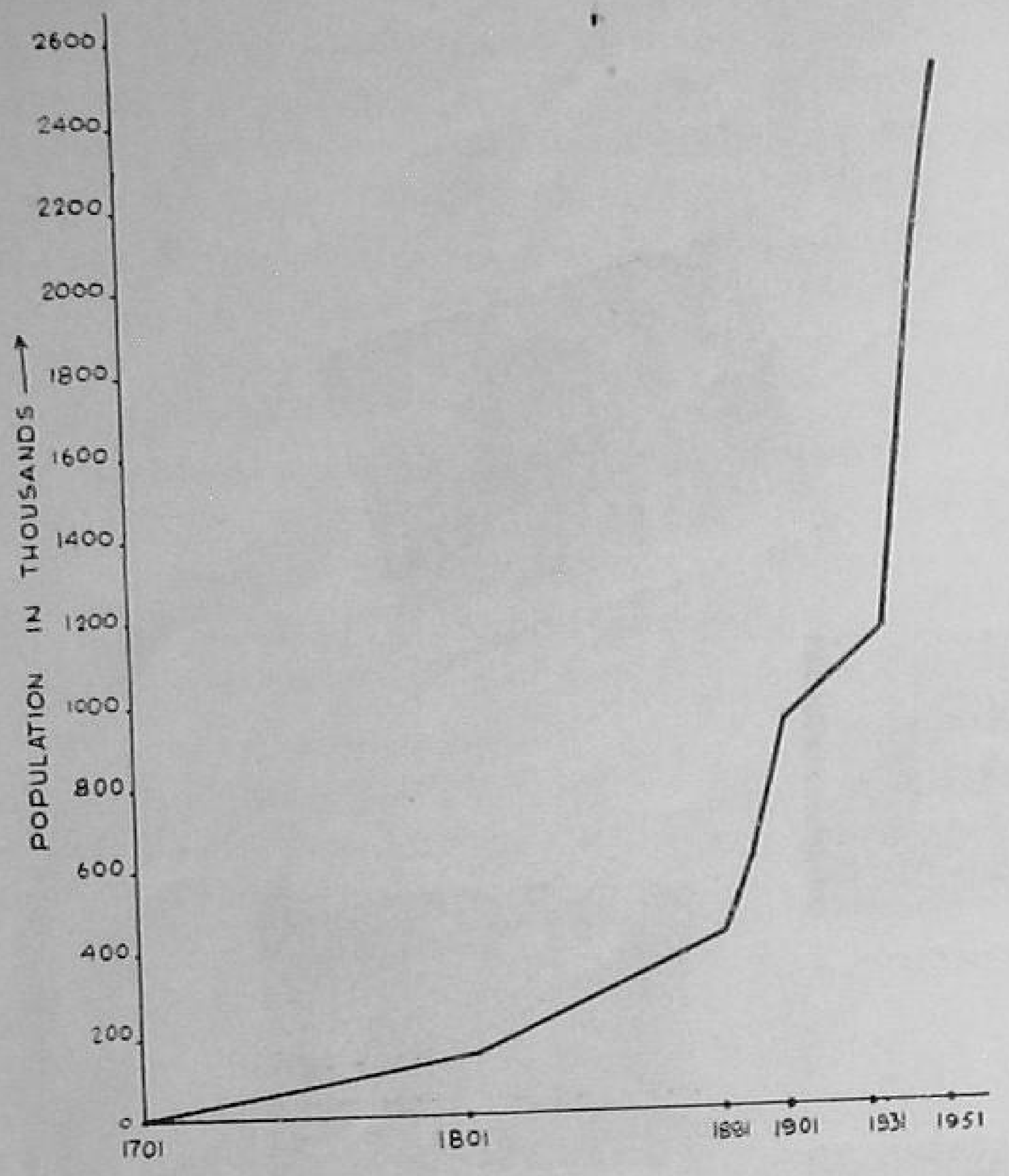
Institute of Jute Technology.



College of Engineering and Technology (Jadavpur).

Bengal Engineering College (New Building).

INCREASE OF POPULATION IN CALCUTTA



POPULATION OF CALCUTTA

Area—35.26 Sq. miles.
28.34 within municipal limits.

Population—
March 1, 1951 2,548,677
March 1, 1931 1,163,771

Growth trends :

(Yr.)	(area)	(Population)
1701	... 1682 acres	10,000
1801	... 4997 „	140,000
1881	...	433,219
1901	...	949,144
1931		1,163,771
1951	... 28,34 Sq. M.	2,548,677

Average desnsity 138 per acre

Highest :
Jorabagan 491
Jorasanko 450
Colootola 399

Lowest :
Watganj 31
Hastings 31

Calcutta and suburban population
1951 3,646,113
1941 2,839,726
1931 1,581,335

Sex Distribution

Yr.	Male	Female
1901	1,000	523
1931	1,000	468
1951	1,000	503 (including displaced females)

Displaced or Refugee population 650,000 (placed 110 colonies).

From Calcutta alone ... 435,228

Bustees—Population : 617,374 (about 25% of Calcutta population).
—including 112,515 displaced persons (18.2% the Bustee pop.).
Huts—21,556 with 155 to 24 living rooms. 17-28. between 25-100 persons. 29-54. below 25 persons each.

1.	Pakistani ...	32,330
2.	British ...	8,717
3.	Nepalese ...	6,645
4.	Chinese ...	5,710
5.	American ...	679
6.	Australian ...	411
7.	American outside U.S.A.	265
9.	Irish ...	162
10.	Dutch ...	146
11.	French ...	133
12.	Guenese ...	132
13.	Italian ...	125
14.	Danish ...	122
15.	Iranian ...	106
16.	Israelitis ...	114

Distribution by place of birth :

Born in Calcutta	33.1%
Born in other districts of West Bengal ...	12.4%
Born in other states of India	26.3%
India	26.3%
Born in Pakistan (including Refugee) ...	26.9%
Born outside India	1.3%
No. of persons born in Asia (other than Inida)	19,710
No. of persons born in Europe ...	5,433
„ „ „ America ...	926
„ „ „ Africa ...	112
„ „ „ Australia ...	95
LANGUAGES SPOKEN	83
Non-Indian	30

Main languages spoken by :

Bengali	1,670,601
Hindi	516,953
Urdu	171,339
Oriya	57,835
English	27,228
Gurumukhi	5,881
Nepali	16,508
Gujrati	13,533

Subsidiary language spoken by 8.1% people.

EDUCATIONAL FACILITIES

Primary Schools	614	(Corporation—214 ; Govt. aided—400) Scholars—73185.
Middle English	23	(Govt.—2 ; 10 for girls) Boys—3,078 ; Girls'—1722.
High Schools	182	(121 Boys ; 61 Girls) Boys—83,679 ; Girls—29,368. (Govt.—Boy Schools—5 : Girl's school—2)
Colleges	48	50,000 approx.
Presses	1,500	(Books published—more than 2,500 a 0ear)
News papers & Periodicals	480	

Colleges established half a century before the establishment of the Calcutta University in 1857.

1.	Calcutta Madrasa	1790	
2.	Fort William College	1800	
3.	Hindu College	1817	(Forerunner of Presidency College—1,865).
4.	Sanskrit College	1824	
5.	General Assembly Institute	1830	(Later Scottish Church College —1,908).
6.	Bethune College	1849	

Outside Calcutta :

1.	Serampore College	1818	
2.	Hooghly Mohsin College	1836	
3.	Krishnagar College	1845	
4.	Krishnanath College Berhampur	1853	
5.	Bengal Engineering College	1856	(Opened in Writers' Building)
		1880	(transferred to Shibpore)

University Education :

Calcutta University 1857
Jadavpur University 1956

Colleges :

University College of Science.
Law College.
College of Technology.

Postgraduate Departments — Arts, Commerce, Medical

Affiliated Colleges :

Vidyasagar	1859
St. Xavier's College	1860
St. Paul's College	1865
City College	1879
Surendranath College (Old Ripon College)	1884
Bangabasi College	1887
David Hare Training College	1908
Ausoth College (Old South Suburban College).	1915

Affiliated colleges for girls :

Bethune College.
Loreto House.
Gokhale Memorial Girl's College.
South Calcutta Girls' College.
Lady Brabourne College
Ballygunge Muralidhar Girls' College.
Women's Christian College.

Others :

Central Calcutta College (Old name Islamia College).	1926
Charuchandra College ...	
City College (Commercial)	1939
All-India Institute of Social Welfare and Business Management.	1943
Institute of Jute Technology	1950
Others.	

EXAMINATIONS HELD UNDER THE CALCUTTA UNIVERSITY AND DIPLOMAS AND DEGREES AWARDED—CURRENT

Matriculation	LL.B.
I.A.	LL.M.
I.A. (Com.)	D.L.
I.Sc.	B.E.
B.A.	C.E.
B.Sc.	Bachelor of Metallurgy
M.A.	M.E. (Pub. Hlth.)
M.Sc.	M.B.B.S.
B.Com.	D.Sc.(P.H.)
M.Com.	D.P.H.
B.T.	D.M.C.W.
Teachership (Arts appreciation)	D.G.O
Dip. Domestic Science	D.O.M.S.
Dip. Social Work (Labour Welfare)	T.D.D.
Dip. Business Management	D.T.M. & H.
Dip. Spoken English	D.I.H.
Dip. Soap Technology	D.C.H.
Dip. Journalism	M.O.
Dip. Librarianship	M.D.
Junior Military Certificate	M.S.
Certificate in Tanning	D.Phil.
Certificate in Applied Psychology	D.Sc.
Dip. Nutrition	Ph.D.
Dip. Dietetics	D.Litt.
M.Sc. Statistics	P.R.S.

RESEARCH OF FUNDAMENTAL SCIENCES

1. Asiatic Society—1784 (Founded by Sir William Jones).
2. Indian Association for the Cultivation of Science —1876 (The oldest non-official Research Institute founded by Dr. Mohendra Lal Sarkar, Sir C. V. Raman,F.R.S.N.L., Joined in 1907).
3. Presidency College Baker Laboratory—1912-13.
4. University College of Science & Technology—1914 (Founded by Sir T. N. Palit).
5. Bose Institute—1917 (Founded by Sir J. C. Bose, F.R.S.).
6. Indian Statistical Institute—1931 (Founded by Professor P. C. Mahalanobis, F.R.S.).
7. Jute Research Institute, Tollyganj—1937 (Founded by the Indian Jute Mills Association).
8. Institute of Nuclear Physics—1940 (Founded by Prof. M. N. Saha).
9. Institute of Jute Technology, Ballyganj—1950 (Founded by Dr. B. C. Roy).
10. State Agricultural Research Institute—1950.

MEDICAL INSTITUTIONS

1. Medical College, Calcutta—established in 1835.
2. Campbell Medical School (upgraded to College and renamed as Nilratan Sircar Medical College (1947)—established in 1873.
3. R. G. Kar Medical College (First non-official College for Medical Education initially called Calcutta School of Medicine & later Belgachia or Carmichael Medical College; founded by Dr. R. G. Kar)—established in 1886.
4. National Medical Institute (amalgamated to form Calcutta National Medical Institute—establishment in 1921.
5. Calcutta School of Tropical Medicine (Postgraduate Institute)—1921.
6. West Bengal Public Health Laboratory—1922.
7. Serological Laboratory, Government of India—1922.
8. Calcutta Medical School (formerly College of Physicians and Surgeons & Bengal National Medical College of India and found by Dr. S. K. Mallik, M.S., M.D., now amalgamated to form the Calcutta National Medical Institute)—1923.
9. Pasteur Institute of Bengal—1924.
10. All-India Institute of Hygiene & Public Health, Calcutta (Postgraduate)—1933.
11. Central Drugs Laboratory (formerly called Biochemical and Drug Standardisation Laboratory) —1937.
12. All-India Institute of Biochemistry and Experimental Medicine (established by Dr. J. C. Roy and was formerly known as Indian Institute for Medical Research)—1935 (Taken over by Government and renamed in 1956).
13. Nilratan Sircar Medical College—1947.
15. Institute of Pediatrics & Child Welfare (Founded by Dr. K. C. Chaudhury)—1956.
16. Smallpox and Cholera Vaccine Laboratories, Government of West Bengal.
17. Corporation of Calcutta Vaccine Institute.
18. Corporation of Calcutta Public Analyst Laboratory.

Dental Institutions

1. Calcutta Dental College and Hospitals (established by Dr. R. Ahmed, taken over by the Government of W. Bengal in 1950). 1929
2. City Dental College & Hospital ... 1932

Veterinary Institutions

1. Bengal Veterinary College affiliated to Calcutta University in 1951. 1894

Hospitals in Calcutta

Number of Hospitals in Calcutta	...	50
Total beds	... ...	7,350

Names of Hospitals	Year of establishment
1. Presidency General Group of Hospital (now called S. S. K. M. Hospital).	1770
1. General Surgical Block	
2. General Medical Block	
3. Obstetrics & Gynoecological Block	
4. Pathology Block	
5. Infectious Diseases Block	
6. Ophthalmology Block	
7. Cardiology Block	
8. Ear, Nose & throat unit	
9. Thoracic surgery unit	
10. Plastic surgery unit	
11. Neuro-surgery unit with Electroencephalography.	
12. Orthopaedic unit	
13. Anaesthesiology unit	
14. Radiology unit	
15. Dental unit	
2. Medical College Group of Hospitals ...	1838
1. Medical College Hospitals ...	1838
2. Eden Hospitals	1881
3. Shama Charan Law Eye Infirmry (later extensions).	1891
4. Ezra Hospitals	
5. Prince of Wales Hospital ...	1910
6. Sir John Anderson Casualty Block	1935
3. Nilratan Sarkar Medical College Group of Hospitals (started as Pauper Hospital and named as Campbell Medical School Hospital in 1873).	1867
1. Woodburn Wing	
2. Fraser wing	
3. Connaught wing (including Anil Biswas's ward)	
4. Mackenzie wing	
5. Baker Maternity Hospital	
6. Cholera ward	
7. Plague ward	
8. Smallpox	
4. Sambhunath Pandit Hospital ...	1871
5. Mayo Hospital	1874
6. Lady Dufferin Victoria Hospital ...	1885
7. Prince Golum Md. Charitable Dispensary & Hospital now (to provide 200 beds) under the name M. R. Bengur Hospital (1952).	1883
8. R. G. Kar Medical College Group of Hospital.	1897
1. Albert Victor Hospital ...	1898
2. Carmichael Hospital ...	1919
3. Roaldshay Surgical Hospital ...	1921
4. Bolyo Chand De Infectious Diseases Hospital.	1925
5. Nirmalendu Tuberculosis Sanatorium.	1925
6. Sir Kedarnath Das Maternity Hospital.	1935
7. Nalini Gupta Radium Annexo	
9. Calcutta National Medical Institute group of Hospital.	1910
Calcutta Medical School Hospital (shifted to present site in 1914).	1910
National Infirmary	1920
Chittaranjan Hospital	1923
10. Jamini Bhusan Astanga Ayurveda Vidyalaya (T. B. Hospital, General Hospital)	1918
11. Sri Vishuddhananda Saraswati Hospital	1919
12. Carmichael Hospital for Tropical diseases	1920
13. K. S. Roy Tuberculosis Sanatorium Jadavpur	1923
14. Chittaranjan Seva Sadan, and Chittaranjan Seva Sadan Children Hospital	1926
15. Ramkrishna Sishumangal Pratisthan	1932
16. Lumbini Park Mental Hospital ...	1940
17. Balananda Brahmachari Tuberculosis Hospital	1944
18. Islamia Hospital	1944
19. Merwari Hindu Hospital	...
20. Chittaranjan Cancer Hospital ...	1948
21. Government Auxilliary Hospitals—2 ...	...
22. Infectious Diseases Hospital Beleghata ...	1956
23. Asharani Bhiwaniwala Hospital	
24. Bangiya Unmad Ashram	
25. B. C. Roy Polio-Clinic & Hospital	
26. Behala Hospital	
27. Bengal Cancer Institute and Hospital	
28. Calcutta Chest Hospital (T.B.)	
29. Calcutta Dental College Hospital	
30. Calcutta Voluntary Hospital	
31. City Dental College Hospital	
32. Dr. M. N. Chatterji Memorial Eye Hospital.	
33. Entally Government Hospital (A.G.)	
34. European Lunatic Asylum.	
35. Mohammad Ali Hospital	
36. Matri Seva Sadan	
37. Mental Observation Ward, Bhowanipur	
38. Military Hospital	
39. North Suburban Hospital	
40. Police Hospital, Calcutta	
41. Police Case Hospital, Alipur	
42. Ram Rikdas Haralalka Hospital	
43. Shyamadas Vaidya Sastrapith	
44. St. Catherine Hospital	
45. Upendranath Memorial Hospital	
46. Sri Visuddhananda Saraswati Hospital	
47. Viswanath Ayurveda College Hospital	
48. Vivekananda Memorial Institution	
49. Hindu Sishu and Prasuti Seva Bhawan	
50. Kironsashi Sebayatan	

Homeopathic Hospitals

1. Bengal Allen Homeo Medical College Hospital
2. Calcutta Homeopathic College Hospital
3. Dunham Homeo College Hospital
4. Pratap Chandra Homeo Hospital

Dispensaries ...	28 (including those of Calcutta Corporation)
Municipal Maternity Homes.	8
Municipal Maternity Units.	8
Nursing Homes (Private)	20
Urban Health Centre Clinics.	Chetla

Tuberculosis Clinics

1. Bengal Tubercular Association.	8
2. Corporation of Calcutta.	4
3. Niramoy ...	4
4. Urban Health Centre	1
5. Calcutta Chest Hospital.	1

LEARNED SOCIETIES

A. SCIENTIFIC

	Name	Year of establishment	Publication
1.	Asiatic Society of Bengal (formerly Royal Asiatic Society of Bengal).	1784	Transactions, Proceedings, Special Reports, books, Thesis and journals of the Royal Asiatic Society.
2.	Horticultural Society of India, Alipur. (formerly—The Royal Agri-Horticultural Society of India).	1820	Transactions and Journals were published. —Now stopped.
3.	Indian Association for the Cultivation Science	1876	Indian J. of Physics & Proceedings of the the Cultivation of Science.
4.	Calcutta Medical Society	1880	Discontinued after 1900.
5.	Calcutta Medical Club	1901	Calcutta Medical Journal.
6.	Mining, Geological and Metallurgical Institute of India	1906	Transactions, Notes & News and Books.
7.	All-India Medical Liatiates' Association, (Bengal Provincial Branch). (Formerly Hospital Assistants' Association and All-India Sub-Assistant Surgeons' Assocn.).	1906	Indian Medical Journal.
8.	Calcutta Mathematical Society	1908	Bulletin of the Calcutta Mathematical Society.
9.	Indian Science Congress Association	1914	Proceedings in four parts.
10.	Association of Engineers	1919	Quarterly Journal.
11.	Institute of Engineers (India)	1920	Quarterly Journal.
12.	Indian Anthropological Society, (formerly Anthropology)	1920	
13.	Indian Psycho-analytical Society	1922	Quarterly Journal *Samiska.*
14.	Indian Chemical Society	1924	Monthly Journal and quarterly Industrial and News Edition.
15.	Geological, Mining and Metallurgical Society of India	1924	Quarterly Journal and Bulletin.
16.	Indian Psychological Association	1925	Indian J. of Psychology.
17.	Institution of Chemists (India)	1928	Quarterly Journal and also a quarterly Industrial & News Edition (jointly with the Indian Chemical Society).
18.	Indian Medical Association (founded at Calcutta), (Old name—Bengal Medical Association, renamed as above in 1930. Now has the largest membership (27,000) among the Scientific Association in India).	1928	Fortnightly journal of the J.M.A. (formerly Indian Medical World).
19.	Himalayan Club (Calcutta Branch)	1928	Himalayan Journal.
20.	Bengal Tuberculosis Association	1929	Bi-monthly Journal of the Tub. Assocn.
21.	Bengal Pharmaceutical Association (Old Name—All Bengal Compounders' Association ; renamed as above in 1934).	1929	Indian Pharmacist.
22.	Geographical Society of India	1933	Quarterly Journal Geographical Review of India (formerly Calcutta Geographical Review). Also Bulletins from time to time.
23.	Indian Society of Engineers	1934	Monthly Journal, "Science & Engineering."
24.	Physiological Society of India. (Branch at Patna Opened in 1942).	1934	Quarterly Indian Journal of Physiology and Allied Sciences.
25.	Society of Biochemistry & Experimental Mediani (Old name —Biochemical Society).	1934	Proceedings, associated with Annls of Biochemistry & Experimental Medicine published by the Indian Institute of Medical Research.
26.	Indian Physical Society	1934	Associated with the Indian Journal of Physics.
27.	National Institute of Sciences of India (Publication Section) (founded at Calcutta).	1935	Bi-monthly proceedings, Bulletins, Transactions, and Indian Science Abstracts.
28.	Indian Science News Association	1935	Science & Culture (Monthly).
29.	Botanical Society of Bengal	1935	Bulletin twice a year and Special publication.
30.	Indian Anthropological Institute	1936	Journal Since 1938.
31.	Bengal Obstetrics and Gynacological Society	1936	Quarterly Journal of Obstetrics & Jynacology of India.
32.	Indian Chemical Manufacturers' Association	1938	Annual Report, News, Letters, Circulars Bulletin.
33.	Zoological Society of India	1939	Half yearly Journal of the Zoological So ciety of India.
34.	Science Club	1940	Quarterly Journal of Science Club.
35.	Engineering Association of India	1942	Annually—Engineering News of India & Some Pamphlets.
36.	Ophthalmological Society of Bengal	1942	Quarterly Journal is published.
37.	Indian Decimal Society	1944	
38.	Calcutta Statistical Association	1945	Quarterly Bulletin
39.	Zoological Society of Bengal	1946	Proceedings twice a year.

Names	Year of establishment	Publication
40. Cardiological Society of India	1946	Indian Heart Journal—three times a year.
41. Indian Psychiatry Society	1947	Quarterly —Indian Journal of Neurology and Psychiatry.
42. Indian Institute of Chemical Engineers	1947	Transactions.
43. Bengal Radiological Association	1948	Quarterly Journal—Indian J. of Radiology.
44. Bangiya Bignan Parishad	1948	Monthly Journal Jnan-O-Bignan's and Books.
45. Indian Society of Refrigerating Engineers	1948	Half-yearly Journal of the Indian Society of Refrigerating Engineers.
46. Indian Pediatric Society	1948	Quarterly Journal—Indian J. of Pediatric.
47. Association of Dermatologists & Veneorologists	1948	Quarterly Journal.
48. Anatomical Society of India	1951	Half-yearly Journal.
49. Indian Dental Association	1955	Quarterly Journal.
50. Indian Public Health Association	1956	
51. West Bengal Probation and After-Care Association		

B. CULTURAL

Names	Year of establishment	Activities
1. Calcutta University Institute (Old Name—Society for higher training of youngmen—Fresh name given in 1896).	1891	Physical Culture Literary Acitivities, Music, debating—competition.
2. Maha Bodhi Society of India	1891	Restoration of Sacred Place and propagation of Messages of Lord Buddha. Journal—Maha Bodhi & Dharmaduta.
3. Bangiya Sahitya Parishad (Old Name—Bengal Academy of Literature.) (Renamed as above in 1894).	1893	Advancement of Bengali language and literature. Journal—Sahitya Parishad literature. Journal—Sahitya Parishad Patrika. Prepares ? Bengali Paribhasha.)
4. Ramkrishna Mission (Belur)	1897	Unity of Religion, humanity, Society welfare, propagation of Calcutta.
5. Calcutta Historical Society	1907	Journal—Bengal Past & Present—Historical promotion of researches and Studies and presentation of monuments and...... ? etc.
6. Bharat Sevasram Sangh	1927	Propagation of Hindu cultural and Religion and Social Works.
7. Bangiya Itihash Parishad	1951	Sucourages historical Studies, discover and research through the medium of Bengali literature—Bulletins quarterly Journal—'Itihash.'

C. MISCELLANEOUS

1. Indian Journalists Association. (Converted into an All-India Body in 1925).	1922	Contact with natural and international Journalists, Establishment of clubs, reading rooms, lodging of meeting ; etc. Publishes quarterly journal—Indian Review.
2. All Bengal Teachers' Association	1921	Standardisation of education and promotion of interest of teachers.
3. West Bengal College and University Teachers' Association	1926	Study of all problems of education and promote interests of bonafide teachers. Publishes Bulletin.
4. Association of Scientific Works of India	1947	Propagation of Scientific knowledge. Publishes Monthly Journal—Vignan-Karmet.

D. Other Societies

Iran Society ; Photographic Association of Bengal ; Bengal Library Association ; Indian Mining Federation ; Academy and Fine Arts ; Institute of Oriental Learning ; Rabindra Bharati ; Shakespeare Society ; Shaw Society ; Bharati Tamil Sangham ; Bengal Theosophical Society ; West Bengal Adult Education Association ; Immunity Scientific Association ; Patent Office Society ; All India Astrological and Astronomical Society ; Romak Lipi Samiti ; Indian Association ; Calcutta Citizens Association ; Calcutta Bar Association ; Calcutta Clinical Association ; Calcutta Medical College Ex-students' Association ; Alumni Association of All-India Institute of Hygiene & Public Health ; Alumni Association of the Presidency College ; Past Students' Union of the University Science College ; Past Students' Union of the R. G. Kar Medical College ; Past Students' Union of the Nilratan Sarkar Medical College ; Past Students' Union of the Calcutta National Medical Institute ; All Bengal Students' Union.

Besides above there are innumerable clubs, unions, political and religious organisations in the city and large number of temples, mosques, churches, gurdwas etc.

Certain Research cum Training Institutes near Calcutta

1.	Central Live stock Research cum Breeding station—Harringhata.	1945
2.	Central Inland Fisheries Research Station Manirampur Ghat—Palta ...	1951
3.	Fisheries in West Bengal—Development and Exploitation with special reference to Deep sea fishing ...	1951
4.	Indian Institute of Technology—Kharagpur	1950
5.	Bengal Engineering College—Sibpur ...	1856
6.	College of Engineering and Technology—Jadavpur.	
7.	Technological Research Laboratory—Tollygunj.—Indian Central Jute Committee	1938
8.	Central Glass and Ceramic Institute—Jadavpur	1950
9.	Indian Association for the Cultivation of Science—Jadavpur.	

Commercial & Vocational Education

Calcutta University Commerce Department ...	1926
Vidyasagar College Commerce Dept. ...	1928
City College Commerce Department ...	1939
Surendranath College Commerce Dept. ...	1941
Bangabashi College	1942
Ashutosh College	1945
St. Xavier's College	1946

11 Institutions in Calcutta teach Bachelor of Commerce.

Vocational Institutions—Roughly 150 in Calcutta teaching shorthand, type-writing and book-keeping.

Source of these are affiliated to the Government Commercial Institute Board.

Vocational & Technical Institutions

1. George Telegraph Training Institute for—Telegraphy, radio-engineering, wireless, typewriting, shorthand, etc.
2. Board of Apprenticeship Training—Government of West Bengal for vocational Education and theoretical and practical training and for holding examination for apprentices in the workshops.
3. Calcutta Technical School.
4. Institute of Jute Technology.
5. Institutions under the Industries Department of Government of West Bengal for training students in—
   (*a*) paicit manufacturing, leather, ink manufacturing etc.
   (*b*) Smithy, Motor driving, welding, electropleting etc.
6. Calcutta Tannery Institute, Government of West Bengal.
7. Government Commercial Institute for training in shorthand, typewriting, book-keeping and secretarial practice, commerce and Business management.
8. All India Board of Technical studies in commerce and Business Administration—under the control of Ministry of Education Government of India. Affiliated college are—(1) Government Commer- Institute.
   (2) City College Commerce Department.
9. Institute of Commerce—Bowbazar Stree, Calcutta —Affiliated to the London Chamber of Commerce.
10. Institute of Cost and Works Account.
11. All India Institute of Social Welfare and Business Management—under the Calcutta University for training Social Worker, Labour Officers, Business Administrators etc.

Education of the Defectives

1. Calcutta Deaf and Dumb School—established in 1893 (Founded by the Principal Umesh Ch. Dutta of City College).
2. Calcutta Blind School—established in 1894 (Founded by Rev. Lal Behari Shah).

Museums and Gardens

1.	India Museum (Jadughar)	1814
	Removed to present building ...	1875
	(*a*) Archaeological	
	(*b*) Geological	
	(*c*) Industrial	
	(*d*) Zoological	
	(*e*) Anthropological	
	(*f*) Art.	
2.	Asutosh Museum of Indian Art (the first University Museum in India for collecting preserving and studying different phases of Indian art particularly of Bonga, Bihar, Orissa).	1937
3.	Victoria Memorial (opened) (one of the most magnificient building of the modern world 182 ft. height—foundation laid in 1906).	1921
4.	Bangiya Sahitya Parishad, Museum (also continuous a Portrait gallery of the distinguished sons of Bengal).	...
5.	Calcutta Corporation Commercial Museum	...
6.	Indian Botanic Graden (Shibpur) (previously called Royal Botanic Gardens established at the initiative of Robert Kyd).	1787
7.	Horbarium at Shibpur Botanic Garden "Mecca of Systematic Botany—contains 5 million dried specimens).	...
8.	Zoological Gardens, Alipur (with aviaries, world animals & reptiles opened by King Edward VII of England while touring India as Prince of Wales).	1875
9.	Indian Horticultural Garden (Alipur)	...

Libraries

The number and variety of libraries in Calcutta and the quality of service offered by them speak highly of the cultural activities of this great city.

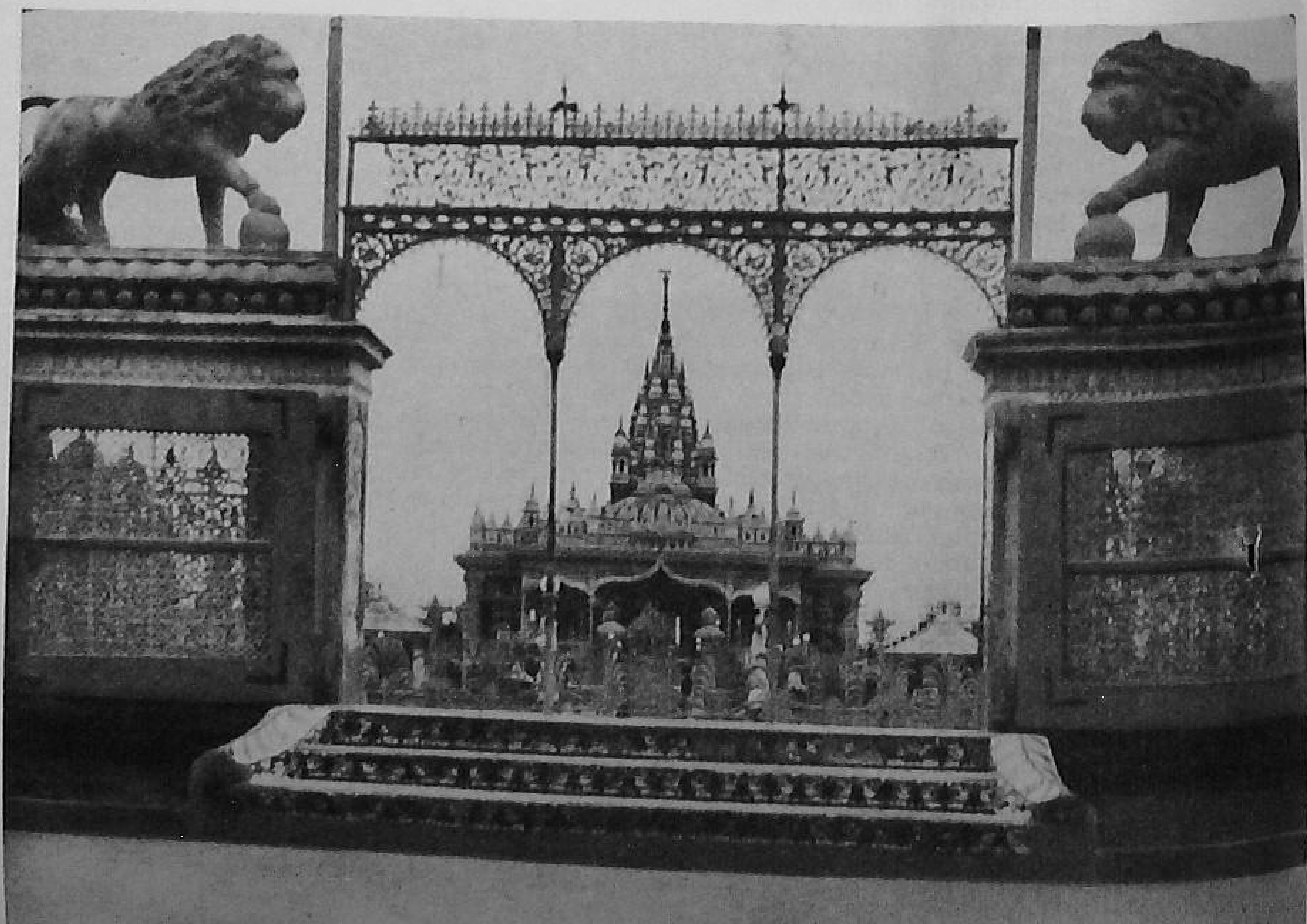
Total number exceeds 400 in Calcutta and 550 in Greater Calcutta.

Variety of libraries :

(*i*) Libraries of Government Department and Corporation.
(*ii*) ,, Learned Societies.
(*iii*) ,, Professional Bodies.
(*iv*) ,, University & Research Departments.
(*v*) ,, Technical Institutions.
(*vi*) ,, Clubs.
(*vii*) ,, Hospitals.

General Post Office.

Pareshnath Jain Temple.



The River Hughly and the Bridge

Infectious Diseases Hospital.

Calcutta around Dalhousie Square.

(*viii*) Subscription Libraries run by individual or bookshops.
(*ix*) Foreign Information Service Libraries.
(*x*) Libraries of Private Individuals.
(*xi*) The National Library.

The valuable stores of knowledge in the Calcutta libraries have been accumulated in the course of the course of the last 175 years. Some of these libraries possess unique collections in their own fields and readers from all parts of Indian and abroad most necessorily come to Calcutta in search for knowledge or to complete their studies on the subjects of their choice.

GENERAL LIBRARIES (General Research Libraries—Chronological)

1. Library of the Asiatic Society of Bengal (contains more than 1,00,000 printed volumes, 33,000 manuscripts and 432 periodicals—founded by Sir William Jones). 1784
2. Library of the College of Fort)William (for the training of Civilians). 1806
2. Library of the College of Fort William (for the training of Civilians). 1806
3. Library of the Hindu College ... 1817
4. Library of the Oriental Seminary ... 1823
5. Metcalfe Library Building (incorporating) Calcutta Public Library—first of its kind in the East). It was first housed in the residence of a Doctor—Dr. F. P. Strang). 1836
6. Library of the Indian Museum ... 1870-75
7. Calcutta University Libraries (the biggest University Library in India) (containing more than 200,000 volumes excluding manusclipts and 532 current journals) pamphlets and 1870-75
8. Bangiya Sahitya Parishad Library (first Public Library to collect Bengali books) 1894
9. Imperial Library (formed by the integration of a number of departmental Libraries of the Government). 1891
10. The National Library (Old Imperial Library) formed by the amalgamation of the Calcutta Public Library and the then Imperial Library and first made public in 1903 by Lord Carzon—renamed as the National Library in 1948—the biggest library in India with a stock of more than 600,000 books and periodicals—located in the Belvedere House—Alipur). 1903

SCIENTIFIC LIBRARIES

1. Library of the Geological Survey of India (the biggest Scientific Library in India with a total volume of 100,000 volumes). 1856
2. Library of the Meteorological office and observatory, Calcutta. 1875
3. Library of the Indian Association for the cultivation of science (more than 10,000 volumes on national and physical science current journals—180). 1876
4. Library of the Indian Botanic Gardens, Shibpur (Best Botanic Library in Asia ; 25,000 volumes and 80 current journals). 1786-7
5. Library of the Botanical Survey of India (more than 35,000 volumes and 80 current journals). 1896
6. Library of the Surveyor General of India 1905
7. Library of the Zoological Survey of India (with the larges collection of books on zoological subject 29,000 and 600 current journals). 1916
8. Library of the Bose Institute (collection on Botany, Chemistry, Physics, Zoology, Anthropology, 80 current journals). 1917
9. Library of the Department of Anthropology (more than 18,000 volumes & 206 current journals). 1946
10. Sir P. C. Roy Research Laboratory Library.
11. Library of the Research Department and Laboratories of Messrs Bird & Co.

SPECIAL & TECHNICAL LIBRARIES

1. MEDICAL :
1. Library of the Calcutta Medical College 1835
2. " Nilratan Sarkar Med. College. 1873
3. " R. G. Kar Medical College 1886
4. " Calcutta Medical Club ... 1901
5. " Director of Health Services West Bengal. ...
6. " School of Tropical Medicine. 1921
7. " All India Institute of Hygiene and Public Health, Calcutta. 1934
8. " Indian Medical Association (Calcutta Branch). 1938
9. " Journal of Indian Medical Association. 1938
10. " Calcutta National Medical Institute. 1948

2. VETERINARY :
Library of the Bengal Veterinary College.

3. DENTAL :
Library of the Calcutta Dental College and Hospitals. 1948

4. STATISTICS :
Library of the Indian Statistical Institute and Laboratory (more than 25,000 volumes and 710 current journal *i.e.* largest in Calcutta). 1932

5. AGRICULTURAL :
(1) Library of the State Agricultural Research Institute (Tollygung). 1950
(2) Library of the Indian Central Jute Committee. 1938

6. ENGINEERING & TECHNOLOGY :
1. Library of the Bengal Engineering College (more than 20,000 volumes). 1680
2. Library of the College of Engineering and Tec'hnology (Jadavpur) (Contains more than 25,000 books and periodicals). 1906
3. Library of the Institution of Engineers ... 1924
4. Library of the Telegraph Store Yard ... 1924
5. Library of the Patent Office, Govt. of India
6. Library of the Government of India Test House (Alipore). 1921

7. COMMERCE & INDUSTRIES :
1. Commercial Library of the Department of Commercial Intelligence and Statistics —Government of India (more than 25,000 volumes and 411 journals). 1919
2. Library of the Bengal Chamber of Commerce. 1894
3. Library of the National Chamber of Commerce. ...
4. Library of the Indian Chamber of Commerce. ...
5. Library of the Department of Industries, Government of West Bengal. ...

8. BAR LIBRARIES :
1. Library of the Calcutta High Court Bar Association.
2. Library of the Alipur Bar Association.
3. Library of the Small Causes Court, Calcutta.
4. The Judges Library, High Court.

9. MUNICIPAL LIBRARY :
Calcutta Corporation Library.

10. COLLEGE LIBRARIES :
More than 30 in number. Of these the following libraries have the best collections :
1. Library of the Presidency College—more than 60,000 volumes properly classified and catalogued.

2. Library of the Sanskrit College—rich in Sanskrit and allied subjects.
3. Library of the St. Xavier's College—more than 30,000 volumes including the collection bequacthed by Dr. Goethals, Late Archbishop of Calcutta.
4. Library of the University Law College—forms unique collection of law books.
5. Library of the)David Hare Training College—contains a remarkable neat collections of books on the principle of Education.

11. School Libraries :

There are 182 High Schools each with a Library attached.

Oldes ones are :
Hindu School Library
Hare School Library
Metropolitan Institution Library and
Others.

12. Club Libraries :

A large number of clubs and Associations have very good libraries. Some of the important ones are :

1. Library of the Calcutta University Institute
2. Library of the Calcutta Club
3. Library of the Bengal Club (one of the biggest club libraries)
4. Library of the United Service Club.
5. Library of the Saturday Club.
6. Library of the Sealdah Railway Institute.
7. Library of the Ballyganj Institution.
8. Library Ballyganj Brati Sangh.
9. Library of the Milani and

others.

13. Libraries attached to Hostels, Hotels and Hos-itals :

Hostel Libraries :
University Law College Hostel
Hindu Hostel
City College Hostel
Vidyasagar College Hostel
Ripon College Hostel
Bangabashi College Hostel
Scottish Church Missionary Hostels
St. Xavier's College Hostel
Y.M.C.A. Hostels (four)
Y.W.C.A. Hostels and
others.

Hotel Libraries :
Great Eastern Hotel
Grand Hotel etc.

Hospital Libraries :
Medical College Hospitals
Carmichael Hospital for Tropical Diseases
Nilratan Sarkar Medical College Hospital
S. S. K. M. Hospital
Chittaranjan Hospital
Chittaranjan Seva Sadan
R. G. Kar Medical College Hospitals and
Others.

14. Public Libraries :

Number more than 250 in Calcutta.
Stock ranging between 500 to 30,000 volumes.
Important ones are :

1. Asutosh Memorial Library
2. Baghbazar Reading Library
3. Chaitanya Library
4. Rajanikanta Gupta Memorial Library
5. Rammohan Library
6. Taltala Public Library
7. United Reading Rooms
8. Library of the Ramkrishna Mission Institute of Culture—the biggest Public Library in Calcutta—containing more than one lakh valuable books.

15. Miscellaneous Libraries :

1. West Bengal Secretariat Library
2. Legislative Assembly Library
3. Library of Gauriya Math
4. ,, Mahabodhi Society
5. ,, Sadharan Brahmo Samaj
6. ,, Sanskrit Sahitya Parishad
7. Library of British Councel
8. ,, United States Information Service.
9. ,, The Art Section of the Museum & Victoria Memorial.
10. ,, Bengal Library Association.
11. ,, Vivekananda Mission Society

Public Lecture Halls

1. Town Hall
2. The Assembly House
3. Indian Association Hall
4. University Institute Hall
5. Senate Hall (Calcutta University)
6. Darbhanga Hall (Do.))
7. Albert Hall
8. Asutosh Hall Calcutta University
9. Overtown Hall (Y.M.C.A.)
10. Y.M.C. (Chowranghee) Hall
11. Y.W.C.A. Hall
12. Bengal Immunity Hall
13. Aryya Samaj Hall
14. Mahajati Sadan
15. Maharastra Hall
16. St. Xavier's College Hall
17. Sealdah Institute Hall Subhas Institute
18. Ram Mohan Library Hall
19. Sri J. C. Bose Institute Hall
20. Rabindra Bharati Hall
21. Sorojini Dutta Memorial School Hall, and and other smaller halls.
22. Federation Hall
23. Students' Hall
24. Asutosh Hall (Asutosh College)
25. Muslim Instvte Hall
26. Bangiya Sahitya Parishad Hall
27. Bagbazar Reading Library Hall
28. Kumar Sing Holl and other

Religious Halls :

1. Ramkrishna Mission Culture Institute
2. Bharat Seva Sangh
3. Sadharan Brahmo Society
4. Nababidhan Samaj
5. Gauriya Math
6. Mahabodhi Society Hall and others.
7. Baptish Mission Hall

Cinema and the Theatre Halls :

Number—75

Sports Clubs of International importance :

1. The National Cricket Club of India (Eden Graden)
2. The South Club (for Tennis)
3. The All India Football Federation
4. The Indian Football Association
5. The Bengal Olympic Association
6. Bengal Vally Ball Association
7. Bengal Water Polo Association

Sports club tents in the Calcutta miaden—41
Pavillions—5

City Ambulance and Social Services :

1. Calcutta Corporation Ambulance Service
2. Indian Red Cross Society (West Bengal Branch)
3. R.W.A.C.
4. St. John's Ambulance Brigade
5. Azad Hind Ambulance
6. Military Ambulance Corps
7. Bharat Sevak Sangh, and Others.

International Cultural Association :

1. Indo-American (USIS)
2. Indo-Japanese
3. Indo-Chinese
4. Indo-Soviet
5. Indo-German
6. British-Indian Association
7. International Bengali Parishad

Number of Licensed Hotels, Restaurents etc. :

Hotels	44
Restaurants	33
Bars	557
Liquor shops	163
Eating houses & Teashops	6,020
Opium shops	33
Ganja & Bhang shops	51

Road Transports (nearest figure) :

Total mileage	450
Private cars	40,000
Motorcycles	4,000
Taxis & Motors	1,400
Stage carriage	868
Lorries	11,000
Contact carriages	818
Tracers	65
Hackney carriage	407
Rickshaws	6,000
Animal drawn carts	800
Hand carts	6,010
Tram	458
Bus	900
Square and Parks	100
Maiden and Lake	
Shipping :	
Number of ships entered (1953) ...	1,503
Tounage	8,837,791
Number of ships cleared	1,520
Tounage	8,951,987
Markets (big and small)	about 50

Survey of India Institutions in Calcutta

1. Survey of India Office, Calcutta—established. 1787
   First Surveyor General—Major James Ronnalty
   Activities—
   Geodetic surveys
   Topographical surveys
   Large scale surveys
   Air Surveys—Civil Aviation
   Miscellaneous Surveys
2. Office of the Zoological Survey of India 1814
   (First Museum set up in the premises of the Asiatic Society of Bengal, Section of Zoological and Anthropological Surveys were joined together in 1916 and given the status of Government Scientific Survey Department).
3. Office of the Geological Survey of India ... 1851
   First Director General—Thomas Oldham.
4. Alipur Meteorological Office and Observatory—Regular Department—1875. 1853
5. Office of the Archaeological Survey of India
   First Director General—Sir Alexander Cunnerigham.
5. Posts & Telegraph Works, Alipur ... 1860
7. Botanical Survey of India (at Botanical Gardens—Shibpur). 1890
8. Department 8. Department of Anthropology (sep from the Zoological Survey Office).

Manufacturers of Drugsk Chemicals & Biologicals in around Calcutta

About 150

Bengal Chemical & Pharmaceutical Works Ltd.
Bengal Immunity & Co.
Standard Pharmaceuticals Ltd.
Union Drugs & Co.
Indian Health Institute & Laboratory Ltd.
Brahmachari Research Laboratory
Calcutta Chemicals Ltd.
East India Pharmaceutical Works Ltd.
Albert David & Co.
Cluconate & Co.
Imperial Chemical Industries
Calcutta Chemical Research Association
Bathgate & Co.
Smith, Stanistreet & Co.
Dabur & Co.
Sadhana Ousadhalaya
A. K. Industries Ltd.
Birla Laboratories Ltd.
Nadia Chemical Works Ltd.
Buttokristo Paul & Co.
Iyer Chemical Works Ltd.
I. M. S. Laboratories
Lister Anteseptic & Co.
Pastevr Laboratories
Bengal Drug ond Pharmeceutical Works
Dr. Bose's Laboratory
Stadmed Ltd.
Estern Drug Co. Ltd.

Research Laboratories under Industrial Organisation in Calcutta

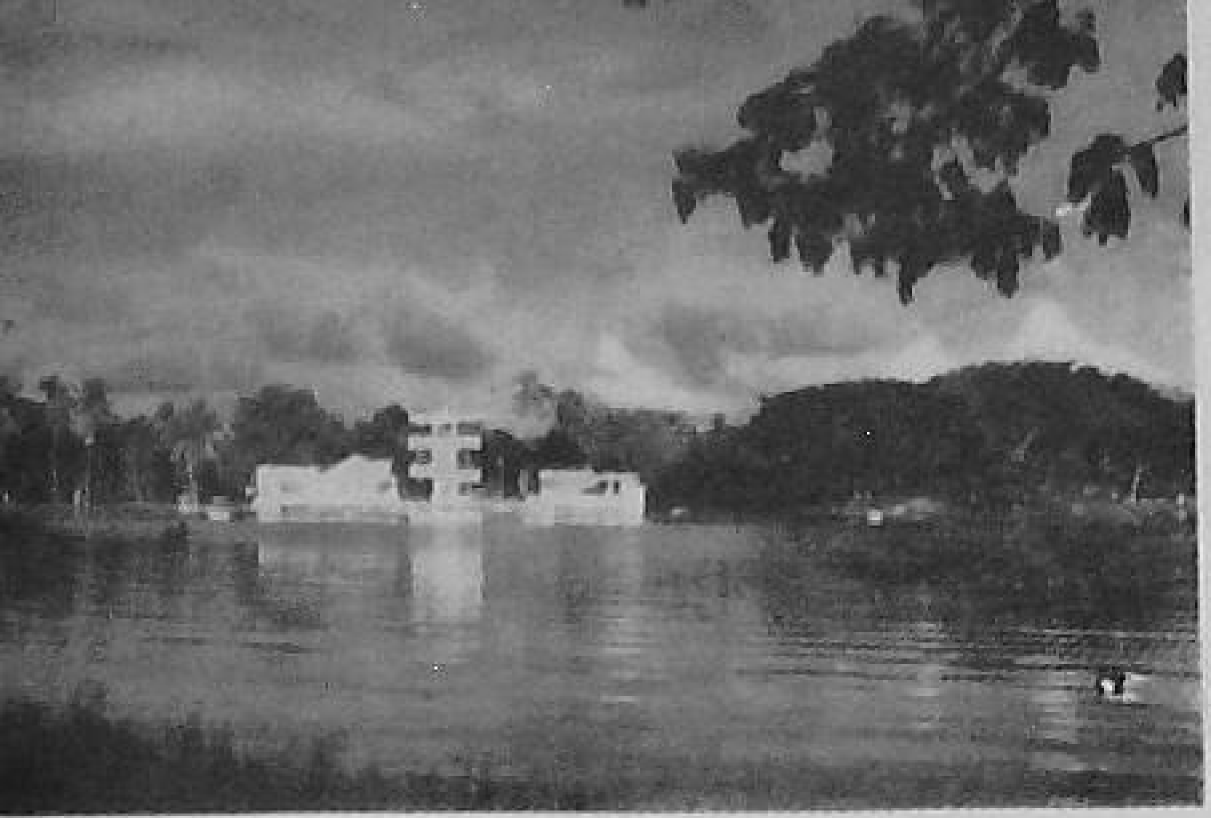
Nearly every industrial organisation has a Research Laboratory or a Research Department to control and improve production.

Certain Industries which main special Research Laboratories are given below :

	Nature of the Laboratories	Interested in
1.	Angelo Brothers Ltd.	Shellac & shellac work
2.	Aluminium Corporation of India Ltd.	Aluminium & electrodes etc.
3.	Burmah Shell	Lubricating oisl and Petroleum Products.
4.	Indian Jute Mills Association.	Jute and Jute products
5.	Khaitan Sons & Co.	Fertilisers & manures
6.	Lever Brothers (India) Ltd.	Toilets, soaps and glycerine.
7.	Phillips Electrical Co. (India) Ltd.	Radiosets
8.	Tobacco Manufacturers (India) Ltd.	Tobacco and Cigarettes.
9.	Bengal Immunity Research Institute.	Drugs and Biologicals
10.	Sri P. C. Roy Research Laboratory (Bengal Chemical & Pharmaceutical Works Ltd.).	Drugs, Chemicals and Pharmaceuticals.
11.	Radon House Research Laboratory.	Electro medical apparatus, Industrial testing and X-ray diagnostic plants.
12.	Messrs Bird & Co.	Geological work and industrial byepanducts.
13.	Laboratory of Express Dairy Company.	Cattle breeding, ster-olity, lactation interallied dairy proiducts and problems.
14.	Ichapur Gun & Shell Fac-Factory.	Misciles Guns and Shells.
15.	Standard Pharmaceutical works Ltd.	Biologicals, Drugs and antibiotics.

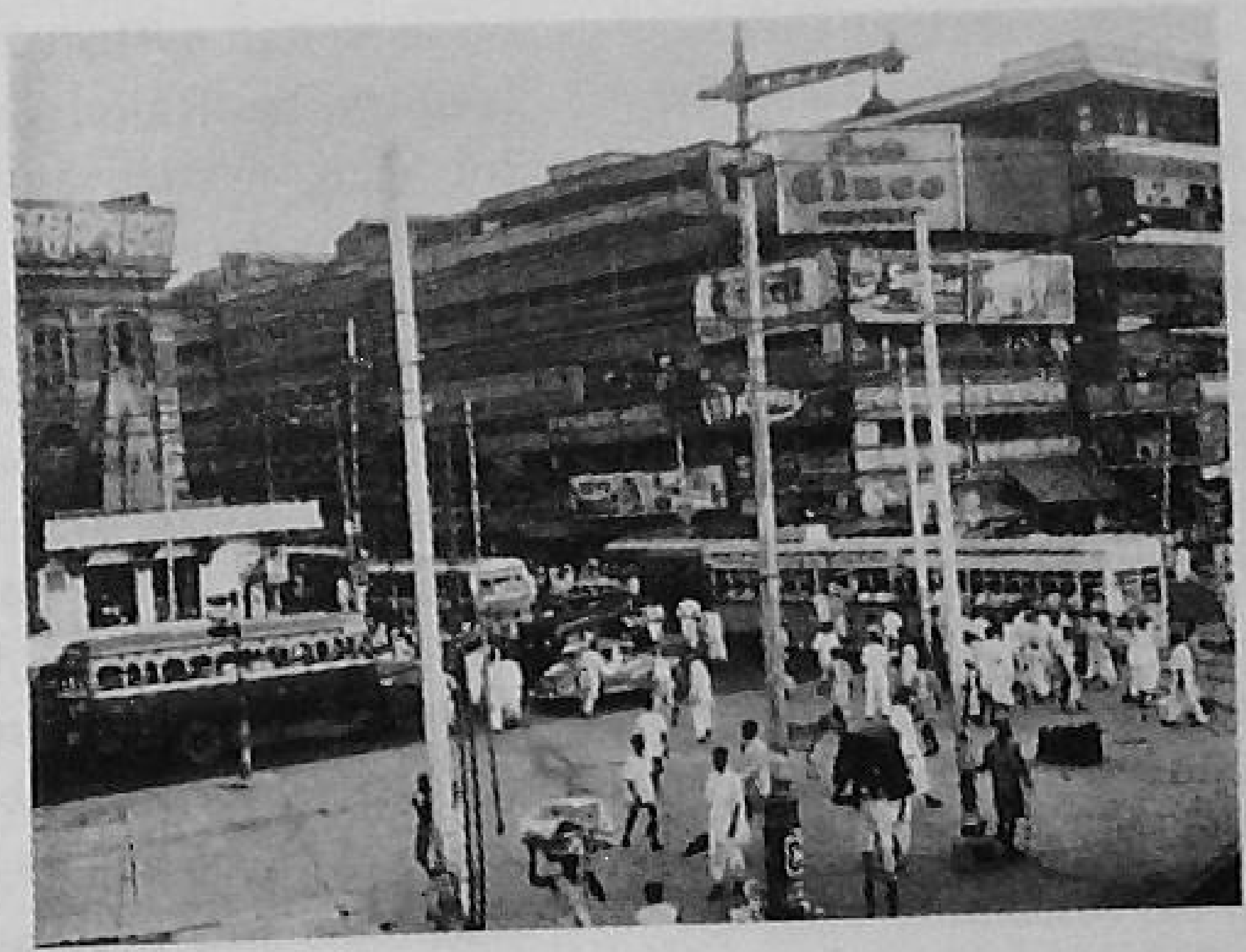
Main Industries in and around Calcutta

Aluminium products	Matches
Belting	Metal box
Buiscuits	Motors Electric Vehicular
Cardbox	Machine tools & Machineries
Chemicals	Oil mills
Cloth	Paints and varnishes
Cycle	Paper
Dry cell & batteries Fash lights	
Drug	Plastics
Electric fans	Ply wood
Expanded metals	Potteries
Enamels	Refrigerators
Fertilisers	Rice mills
Flour mills	Ropes
Glass (all types) & Ceramic	Rubber goods
Ink	Soap
Iron	Sewing machine
Jute	Shoe making
Hosiery	Sulphuric acid
Lamps (Electric & Lanters)	Tanning
Liquid chlorine	Vanaspati



Dhakuria Lake.

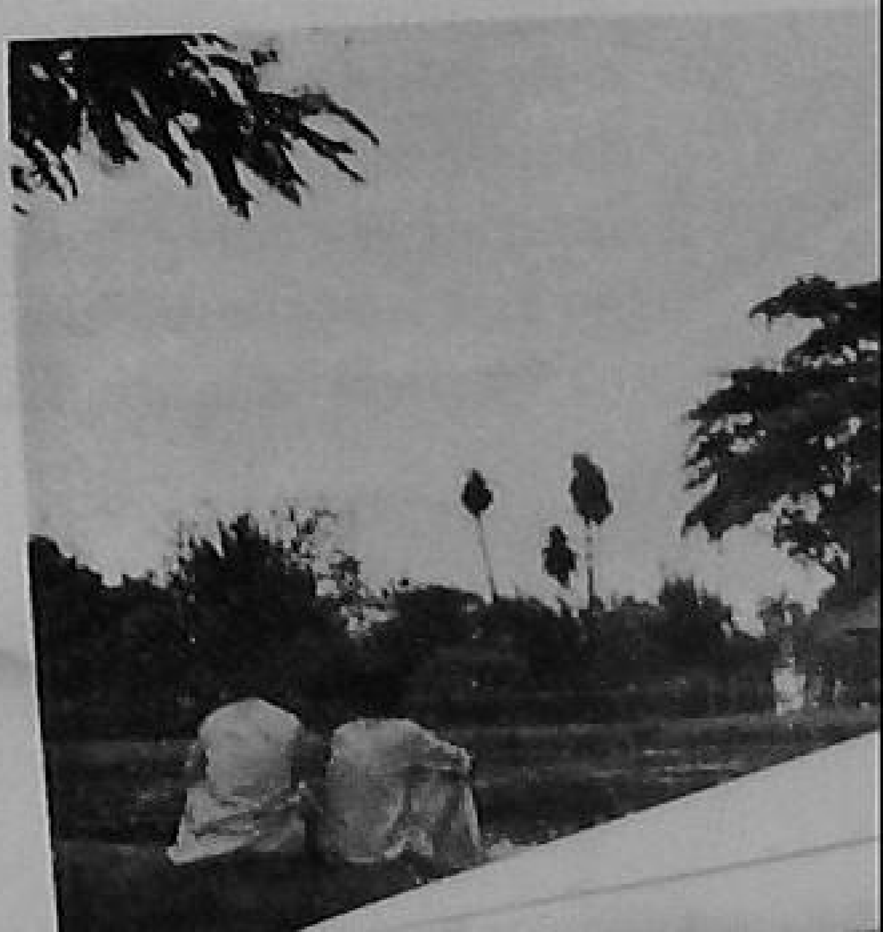
New Secretariat Building



A busy street corner.

Telephone Bhawan.

Eden Gardens.



History of Public Health in India

(Chronology of Development)

Dr. K. C. Patnaik, *Calcutta*

3000 to 1500 B.C :

Excavations at Mohenjodaro (Larkana) in Sind and Harappa (Montogomery) in the Punjab show remains of the Indus valley civilization which include the relics of planned cities, houses built of baked bricks, elaborate system of drainage, public baths, etc. suggest the practice of environmental sanitation in a municipal life.

1400 to 1000 B.C :

This was the period of Aryan invasion—the era of Vedas, Upanishads, Vedangas, Ramayana, Mahabharata and Bhagwat Geeta—the most ancient of the world's literary lore. The Ayurveda as conceived at the time deals with the science of life which includes classification of males and females and their compatibility in marriage, division of a life span into periods of childhood (*Balyawastha*), youth (*Yubawastha*), retiring age (*Prorhawastha or Banaprastha*) and old are (*Bridhawastha*) and rules to guide the healthy growth of an individual. Temple medicine leading to privileges of Brahmins and the growing complexities of their rituals in birth, death, sickness and cure predominated the era. Emphasis was laid on mental and moral health as is revealed from the following quotations:

"He whose mind is free from anxiety and pains, indifference and pleasures, loosed from passions, fear and anger is called the stage of stable mind"—Geeta. Manu Samhita prescribed definite rules and regulations for personal health (*Bramhacharya*), dietetics and maternity through the erection of delivery huts (*Antur griha*) for natal and postnatal periods.

600 B.C. to 600 A.D :

Vedic era continued and reached its highest development between 600 B.C. to 200 A.D.

Budhism and Jainism over Brahmanism revolutionised religious preachings which included the merit of providing food, medicine and nursing to the sick and the sufferer. It is at this period that the medical education was introduced in Taxila and Nalanda University leading to the title of Pranacharya and Pranavishara. Restrictions over practice of Kuvaidyas or Quacks were imposed. Medical oath binding the student with rules of personal hygiene, prevention of transmission of infection and contamination to others and moral behaviour and obligations to the teacher and patients of both sexes was enforced. A series of hospital system was also developed in the country by Rahul Sankirtyana (son of Buddha) for men, women and animals which was perpetuated by King Asoka in later years in a greater measure by exteding the hospital system all throughout his kingdom and abroad, the relics of which are still found in Ceylon and Nalanda.

650 A.D. to 1850 A.D :

India met Islam through the conquest of Sind and West Punjab by the Pathans and the Moghuls. The Islamic Medicine (the Unani system) trickeled through with the codified precepts of hygiene—"Cleanliness is piety." Circumcision was practised as a measure of personal hygiene and cleanliness. Eating of pork was prohibited to guard against taenia infections. In the early 17th century the first seed of western medicine was sown by Sir Thomas Roe in the court of Jahangir and thus laid the foundation of East India Company. Arrival of English physicians as ship surgeons and training of assistants to serve as dressers to protect the health of the British Army and Civilians prepared the way for furtherance of western medicine in India.

1825—The Quarantine Act was promulgated.

1859—A Royal Commission, was appointed to investigate into the cause of extremely unsatisfactory condition of health in the British Army stationed in India. This Commission pointed out the necessity of establishing in each Presidency a "Commission of Public Health" to maintain the health of the Army and that of the general population by prevention of

epidemics, construction of drainage system and provision of water supplies.

1860—The Indian Penal Code came into existence.

1864—Commissions were appointed in the three Presidencies of Madras, Bombay and Bengal.

1869—A Sanitary Commissioner and a Statistical Officer were appointed for the Government of India. Sanitary Commissioners were also appointed in the same year for the presidency provinces as well as the North-Western Provinces, Oudh, the Punjab and the Central Provinces. Their duties were purely advisory.

1873—The Birth & Death Registration Act was promulgated.

1880—The Vaccination Act was passed.

1881—The 1st Indian Factories Act came into existence.

1884—The Bengal Municipal Act was put into operation.

1885—The Local Self Government Act under the seal of the late Queen Victoria created local bodies and thus handed over the seed of autonomy to the people.

1886—The Medical Act was passed.

1888—The Government of India laid down that the promotion of sanitation should be regarded as one of the most important duties of local bodies. The post of Sanitary Commissioner with the Government of India was merged with that of the Director General, Indian Medical Service.

1890—The Indian Railways Act came into being.

1896—Plague broke out in epidemic form in different parts of India and the utter inadequacy and defects of the then existing health organisation were brought into lime-light leading to the appointment of a Plague Commission. In the same year the Birth, Death and Marriage Registration Act was passed.

1897—The Epidemic Diseases Act was introduced.

1904—The report of the Plague Commission resulted in the revival of the office of the Sanitary Commissioner with the Government of India.

1911—The Indian Research Fund Association was established for the promotion of research and the revised Indian Factories Act was promulgated.

1912—The Government of India authorised the local Governments to select their own Sanitary Commissioners and sanctioned the appointment of 8 additional deputy sanitary commissioners for the provinces and of the district and municipal health officers, graded according to qualification. Option was given to the provinces to decide whether these H.Os. should form provincial cadre or remain under the local authoritits. The latter course was adopted by most of the provinces.

1914—The Government of India formulated a forwarded policy when some useful principles of sanitary organisations including research sanitary surveys, urban sanitation, rural sanitation, health education and the control of epidemics were laid down.

1917—The Indian Vessels Act was passed.

1919—To meet the public demand the Montague-Chelmsford Reforms were introduced which led to the transference of public health, sanitation and vital statistics to provinces as the first real step towards decentralisation in health administration of the country.

1919—The City and District Municipalities Act and Local Board Acts containing legal provisions for the advancement of Public Health under the local authorities in several provinces were passed.

1920—The Bombay Matternity Benefit Act was introduced.

1922—The Indian Red Cross Act came under operation.

1923—
1924—Provincialisation of service of D.H.O. and Municipal Health Officers was affected in a number of provinces. The Indian Mines Act and the Cantonment Act and Women's Workman Compensation Act were passed.

1930—
1940—The Royal Commission on labour in India known as the Whitley Commission was appointed to advise on the measures for improvement of health and living conditions of workers. This period also saw the establishment of Model Rural Health Units in different provinces with aid from the Rockefeller Foundation.

1933—To meet the growing demand for locally trained public health workers in the country the All India Institute of Hygiene and Public Health was established in 1933 at Calcutta with the aid of the International Health Division of the Rockefeller Foundation of New York.

1935—The Government of India Act, 1935 revitalised the 1919 Act giving greater autonomy to provinces. All health activities were grouped under 3 lists—Federal, Concurrent and Provincial under the control of Central, Central and Provincial and Provincial Governments respectively.

1937—The Central Advisory Board of Health was constituted with the P.H. Commissioner as Secretary and with representatives not only of the provinces but also of the Indian States and was vested with the function of co-ordinating the health services in the provinces and the centre, though only in an Advisory capacity.

1939—The Madras Public Health Act was passed.

1943—

1946—The Health Survey and Development Committee with Sir Joseph Bhore as the Chairman, was appointed to investigate and to prepare a future plan of health services in India. The report which is unique of its kind was published in 1946. During the same period Professor Adharkar was appointed by the Government of India to make enquiry regarding the possibility of a social security plan for the people of the country.

1944—The first post-graduate research and training cum public health service centre at Singur, Hooghly District, West Bengal, was established under the All India Institute of Hygiene and Public Health, Calcutta, in collaboration with the Government of the than Bengal.

1947—The Asian Labour Conference was held in Delhi which passed a resolution to establish social security services as an essential condition for building up a democratic society.

1948—The Employees State Insurance Act was passed by the Central Government, and the report of the Environmental Hygiene Committee appointed by the Government of India with Dr. B. C. Das Gupta as Chairman was published. The W.H.O. came into existence and produced the Magna Charta for Health with India joining as a member state.

1949—The Constituent Assembly adopted the constitution of India on the 26th November, 1949. According to the Article 246 of the Constitution, 3 lists namely, the Union, the Concurrent and the State lists were made out covering all health subjects amongst other things. The power to make laws on any health subject included in the Union List, was vested with the Parliament and for subjects included in State list and Concurrent list with the State Legislatures and Parliament and State Legislatures respectively. The Articles 41 and 42 dealing with the directive principles of the state's policy declared the following. Article 41—"The State shall within the limit of its economic capacity and development make effective provision for securing the right to work, to education and to public assistance in case of unemployment, old age, sickness and disablement and in other cases of undeserved want."

Article 42—"The State shall make provision for securing just and human condition of work and for maternity relief."

The South East Asia Regional Office of W.H.O. was established in New Delhi.

1950—The Planning Commission was set up by the Government of India.

1952—A Central Council of Health was stuatutorily constituted, with the Union Minister for Health as Chairman and the Health Ministers of States as members. The object is to coordinate health policies between the Central and the State Governments. They meet at least once a year. The resolutions (of an advisory nature) are communicated to the Central and State Governments for implementation.

The operation of Employees' State

Insurance Scheme was commenced in Delhi and Kanpur.

The First Five Year Plan was presented to Parliament by the Prime Minister.

A mass B.C.G. campaign was started in 1952.

The Community Development Projects were launched throughout the country with the object of integrating all the nation building services like agriculture, communication, education, public health, recreation, housing etc. in the rural areas.

1953—The Model Public Health Committee was appointed by the Union Minister of Health to draw up a model comprehensive Public Health Act to bring together existing legal provisions relating to health scattered as various enactments in different states and to modify certain sections of the law so as to bring new provisions in line with the recent advances in public health for better and efficient public health administration, and also to put into practice the recommendations of Environmental Hygiene Committee. The National Extension Services programme was started in various states. The National Malaria and the National Filaria Control Programmes were introduced and Family Planning Research Programme Committee was formed by the Central Government.

1954—A Contributory Health Service scheme was instituted for the Union Ministers, and government employees of all classes and their families stationed at New Delhi.

The Central Social Welfare Board was set up which launched a rural project now known as the Rural Extension Services.

1955—The Food and Drug Adulteration Act came into force.

1956—The framework of the Second Five Year Plan was placed before the public. The report of the Model Public Health Act Committee was published. For the fulfilment of the objectives and practice of social medicine the Health Ministry's Scheme to established a Central Health Education Bureau with the duties of sitting up a health museum, a film strip production unit and a film lending library in order to mobilise the public opinion for accepting public health legislation was finalised.

History of Medical Education in India

Dr. S. C. Seal, *Calcutta*

1. Modern Scientific System.

16-18th Century:

The present system of practice of medicine had its origin in the early years of the 16th century following the landing of the Portuguese in Calicut in 1948 and the arrival of the English Physicians as Ship's Surgeons and later as Medical Officer of British troops in India under the East India Company or of foreign Missionary centres.

These foreign medical practitioners required assistants to help them in their daily practice and to serve in the Civil and Military hospitals as compounders and dressers and thus a class of men, both Indians and Eurasians grew up who when sufficiently trained were styled as "Native" doctors and were appointed as Gazetted subordinates in charge of Regimental or Civil hospitals, particularly under the stress of war.

19th Century:

Organised medical teaching was actually started in the first half of the 19th century. At that time the state of he indigenous medical practice by Vaids and Hakims was so intimately connected with the welfare of the people that the initiative of the western system had to start with a mixed teaching. In fact, before 1807 from 50 to 100 native doctors were allowed to attend the hospital to initiate the study of western system and to introduce it among their countrymen. The first medical school under the name 'Native Medical Institute' was established at Calcutta in 1824, when a regular three years' course in Hindusthani was first introduced by Dr. Jameson. Similar schools were also started at Bombay in 1826 and at Madras in 1827. The Bombay school was closed down after 6 years and re-opened as a college in 1845. At Calcutta the students were also allowed to study Sushruta and Charaka or Avicenna and Unani, along with the western system. In 1834 this arrangement was considered insufficient and on the recommendation of an Enquiry Committee Lord William Bentinck the then Governor General established the first Medical College at Calcutta in 1835. Next year inspite of the existing prejudices students led by Pandit Madhusudan Gupta started dissecting the human body.

Three other Medical institutions were established in succession namely, the Medical School at Madras in 1835 which was converted into college in 1850, the Medical College at Bombay in 1845 and a third college at Lahore in 1860.

With the increase of popularity of western medicine the demand for trained doctors soon became high and it was considered desirable to train even substandard doctors in larger numbers, with the result that a number of teaching institutions gradually sprang up all throughout the country through private as well as public enterprises. By the end of the 19th century the total number of institutions offering training on Medicine rose up to 20, including 4 colleges of graduate standard. The Medical colleges were running a course of 5 years and the schools usually 4 years or 3 years (Vernacular). The degrees and diplomas awarded by the colleges were M.B. (M.B. & C.M. by the Madras University) and L.M.S. and the schools, diploma of Dressers, Hospital Assistants, Sub-Assistant Surgeons and V.L.M.S. etc.

20th Century:

(a) *Position at the turn of the century:*

In 1901 four medical colleges and 17 schools were accommodating 1,466 and 2,727 students with budget estimates of 4¼ and 3 lakhs respectively. All the colleges and only eight of

the schools were being run by the Government. With the progress of time three of the schools were abolished, 12 were upgraded and one college and two schools fell in the Pakistan State.

(b) *Subsequent Development:*

The total number of new institutions established since 1901 is 61, 18 schools and 43 colleges. Of the schools 10 were instituted by the Government, 6 by the private agencies and one by the missionaries and one by the native state. By 1954 nine of these schools were upgraded, six were abolished, two are in East Pakistan and one was still running(?). Of the 43 colleges 20 have been upgraded from the school standard and 23 established during the present century, including the five postgraduate institutions namely the School of Tropical Medicine, the All India Institute of Hygiene and Public Health, the Institute of Child Health and the S. S. K. M. Karnani Hospital and Postgraduate College at Calcutta the All India Institute of Mental Health at Bangalore and one women's college at Delhi. With the exception of eight institutions run by private bodies the rest are directly or indirectly (though Governing Body) managed by the Government. All these colleges have been brought to the same standard of M.B.B.S. Degree as presented by the Indian Medical Council except the College of Physicians and Surgeons of Bombay which awards M.C.P.S. and F.C.P.S. diploma recognised by the Council as equivalent to the M.B.B.S. Degree. The chronological order of establishment of these institutions in India since 1824 is given in Table I and the decenniel prograess of development is shown in Fig. I.

Medical Education for Women:

Lady students were admitted first time in the Calcutta Medical College in 1881, and soon they were also admitted to the Madras and Bombay Medical Colleges. The Agra Medical School started admitting women students in 1883 and the Campbell Medical School, Calcutta in 1885. Female section was also opened in the Medical School at Hyderabad (Sind) in 1897. The first Medical School exclusively for women was opened at Ludhiana, Women's Christian Medical School, in 1894 and the first Medical College, the Lady Hardinge Medical College, at Delhi in 1916. The second Medical School for women was started at Vellore in 1918 and the third in 1926 at Agra when the women section was completely separated from the Agra Medical School. At present most of the colleges admit women students and the Lady Hardinge Medical College at Delhi is the only institution exclusively meant for women.

Progress of the Standard of Medical Education in Indla:

(a) *19th Century:*

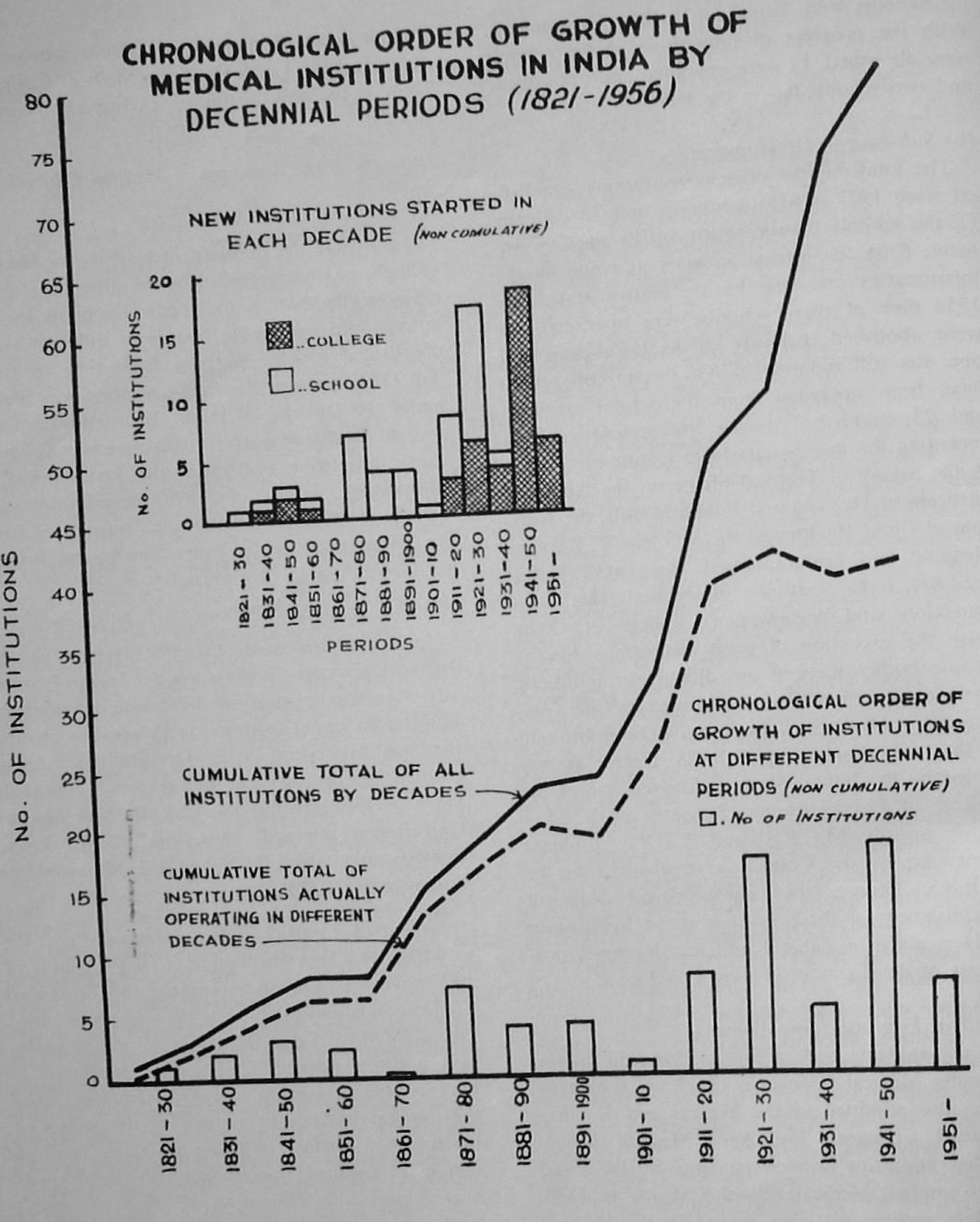
Since 1857 the standard of teaching in Medical colleges was being guided by the different Universities, while that in the medical schools by the autonomous examining boards in different states constituted for the purpose from time to time. Till 1894, however, medical education was placed under the Director of Public Instruction as there was no Health Ministry in the Government which came into being only after the first quarter of the present century. In 1899, the administrative control of Medical education was transferred from the Director of Public Instruction to the Inspector-General of Civil Hospitals.

(b) *20th Century:*

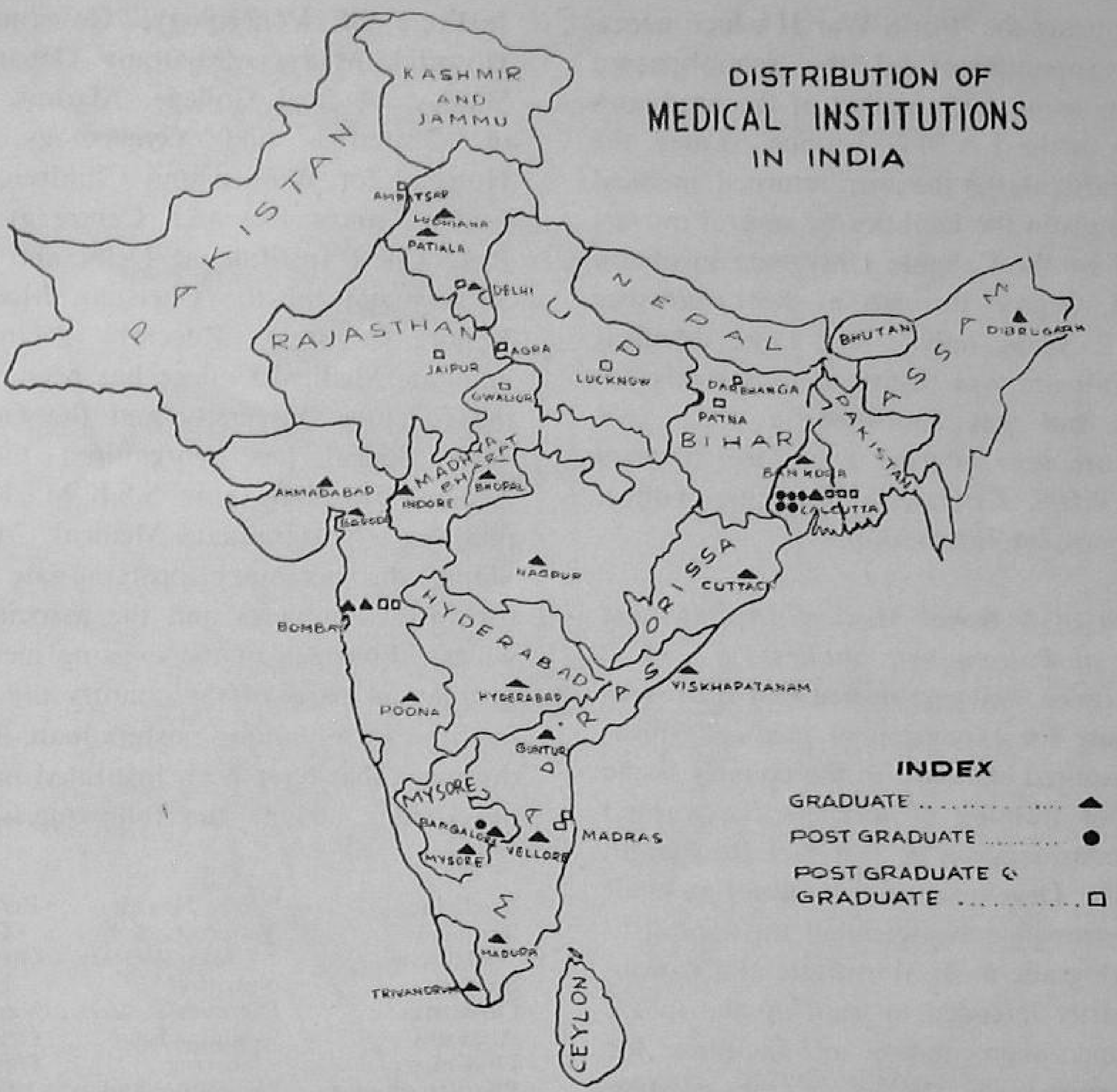
In accordance with the 1902 report of the Indian University Commission the Indian University Act was passed in 1904 empowering the universities to put forth new regulations and raise the medical curriculum. Though the degrees granted by the different universities were made more or less identical the Calcutta and Madras Universities retained M.B. and L.M. & S.; Bombay maintained M.B.B.S. & L.M.S. and the Punjay only M.B.B.S.

Provincial & Central (Indian) Medical Councils:

Within two years beginning from 1912 most of the provinces (now states) passed the Provincial Medical Acts and established their respective Provincial Medical Councils which helped to maintain uniform standard of medical education in their respective medical schools and to regularise the medical practice by registering the names of the qualified doctors. Certain privileges such as issuing of medical, vaccination and death certificates, medical examination of insurance cases, legal witness in law courts etc. have been granted to these registered qualified practitioners. These councils also control the ethics and behaviour of the registered practitioners but no penalties are imposed on the unqualified practitioners. A separate Body under the name of State Medical Faculty or Examining Board was established to control the examinations for the award of the diplomas of L.M.F., L.S.M.F., M.M.F., F.S.M.F. etc.


CHRONOLOGICAL ORDER OF GROWTH OF MEDICAL INSTITUTIONS IN INDIA BY DECENNIAL PERIODS (1821-1956)
NEW INSTITUTIONS STARTED IN EACH DECADE (NON CUMULATIVE)
..COLLEGE
..SCHOOL
No. OF INSTITUTIONS
PERIODS
1821-30
1831-40
1841-50
1851-60
1861-70
1871-80
1881-90
1891-1900
1901-10
1911-20
1921-30
1931-40
1941-50
1951-
No. OF INSTITUTIONS
CUMULATIVE TOTAL OF ALL INSTITUTIONS BY DECADES
CUMULATIVE TOTAL OF INSTITUTIONS ACTUALLY OPERATING IN DIFFERENT DECADES
CHRONOLOGICAL ORDER OF GROWTH OF INSTITUTIONS AT DIFFERENT DECENNIAL PERIODS (NON CUMULATIVE)
. No OF INSTITUTIONS

DISTRIBUTION OF MEDICAL INSTITUTIONS IN INDIA



Even at the very early stage of medical education on western system, e.g., as early as 1844, students of the Calcutta Medical College were sent to U.K. for higher medical studies with a view to improve the standard. Thereafter a gradually increasing number of students went abroad for higher studies and specialisation in different branches of Medicine and thus the standthr was maintained at a fairly high level. Even so, the General Medical Council of Great Britain did not officially recognise our degrees nor granted reciprocity till 1895. This was temporarily withdrawn between 1924 and 1929 and thereafter revived again permitting the graduates of our universities to sit straight for M.R.C.P. and F.R.C.S. Examinations.

The necessary stimulus given by the question of standard and reciprocity brought into being the Indian Medical Council on the 1st February 1935. This Council has since then been playing an important role in maintaining and improving the standard of medical education in India. A reciprocity has also been established by the Indian Medical Council with the various universities in the world such as those in Great Britain and Ireland, U.S.A., Canada, France, Italy, Germany etc. Now the students have opportunities to appear in the preliminary part of M.R.C.P. and F.R.C.S. Examinations of the Royal College of Physicians and Surgeons of U.K. in India itself. By 1920, sufficient number of Indian doctors qualified themselves with higher postgraduate degrees to take up the professorial jobs which were mostly in the hands of the officers of the Indian Medical Service and a move for Indianisation of the professional chair was made from 1921 onwards. By the thirties the process of Indianisation was hastened to occupy most of the chairs except those of a few senior posts.

In 1938, at the instance of the Government of India, medical education in the schools in India was reviewed by a conference which recommended abolition of the school standard and setting up of a uniform graduate standard of medical education throughout the country. Accordingly, the Indian Medical Council in 1942 passed a resolution to abolish all schools by 1947. In taking up this decision the Council was greatly influenced by the move made by the members of the Indian Medical Association and by the cir-

cumstances during the World War II which necessitated the appointment of the school-passed doctors in the same rank as that of the graduates of medicines in the I.A.M.C. Service. Later, the licentiates, particularly the war returned medical officers, were given the facilities by several universities headed by the Calcutta University to obtain the M.B.B.S. degree through a short refresher course for 2 years only. The Lake Medical College at Calcutta was instituted exclusively for this purpose but was abolished in 1953. All Universities are now offering a uniform 5 years graduate M.B.B.S. Course in Medicine with a 6 months course of interneship.

Establishment of National Medical Institute and Organisation of Postgraduate studies:

It has now been well established that the essential prerequisite for expansion of medical education of the required standard in the country is the organisation of training of teachers (i.e. capital goods). In consideration of this fact the Health Survey and the Development Committee in their 1946 report strongly recommended the establishment of a high grade medical institute at a national level primarily intended to train up the future professors, and augmentation of facilities for imparting postgraduate studies in the existing institutions. As a result of this move, the All India Institute of Medical Sciences has been established now at Delhi, for which a generous contribution has been offered by the New Zealand Government. There were, however, two postgraduate Medical Institutions already existent in the country namely, the School of Tropical Medicine and the All Indian Institute of Hygiene and Public Health, both stationed at Calcutta, and this year three other postgraduate institutions have been esablished namely, the Indian Institute of Child Health and S.S.K.M. Hospital at Calcutta and the post graduate college All India Institute of Mental Health at Bangalore.

In addition to the above, the Government of India have upgraded several existing institutions for offering facilities in postgraduate education. Among them may be mentioned the Industrial Hlgience Section of the All India Institute of Hygiene and Public Health, at Calcutta, the Institute of Venerology, Government General Hospital, Madras, Anatomy Department of the Stanley Medical College, Madras, the Institute of Obstetrics and Gynecology, Government Hospital for Women and Children, Madras, the Indian Cancer Research Centre at Bombay, the Patel Chest Institute at Delhi and the Thoracic Surgery unit of the Christian Medical College, Vellore (Madras). Recently a University postgraduate Medical College has been announced by the Calcutta University and the Government of West Bengal has reorganised the Presidency General Hospital (now S.S.K.M. Karnani Hospital) as a postgraduate Medical College by providing the necessary postgraduate departments for various subjects and the associated Hospital wings. Fourteen of the existing medical colleges in different parts of the country are now offering facilities for obtaining postgraduate degrees. The diplomas that have been instituted in the different universities include the following subjects:

Medicine	Public Health	Pediatrics or Child Health
Tropical Medicine	Maternity & Child Welfare	Oto-Rhino-Laryngology
Surgery	Nutrition	Venereology
Obstetrics	Dietetics	Orthopaedics
Anatomy	Sanitary Engineering	Obstetrics & Gynaecology
Physiology	Preventive and Social Medicine	Dermatology
Pharmacology	Industrial Hygiene	Tuberculosis
Biochemistry	D.Sc. and D.Phil. in various cognate subjects	Anasthesia
Pathology		Ophthalmology
Bacteriology		Radiology
Psychological Medicine		

Training of Auxilliary Health Personnel:

There is now a great demand and necessity for the training of auxilliary health personnel such as, the nurses, lady health visitors, public health nurses, midwives, dais, health educators, hospital social workers, health inspectors, pharmacists, laboratory technicians, vaccinators, dieteticians, nutritionists etc. The Second Five Year Plan has allotted some funds for this purpose. The need for a substandard medical personnel for rural areas is also now being increasingly felt. Time and future will show whether the steps taken to abolish the medical schools have been wise enough at this stage of wide development in the country.

TABLE 1

Chronological Order Of Establishment Of Medical Institutions In India

Ser. No.	Year founded	Name of the Institution	Location	Financed by	Courses, degrees and diplomas	Present status
1	1824	Native Medical Institution.	Calcutta	Government	Native Assistant	Abolished in 1835
2	1835	Calcutta Medical College.	Do	Government	Upto 1906—M.B., L.M.S., V.L.M.S., H.A., Military Asst. Surgeon ; After 1906—M.B., M.D., M.S., M.O. ; After 1916—M.M.F., M.B. (now M.B.B.S.), M.D., M.S., M.O., D.G.O., T.D.D., ~~T.D.D., D.G.O. D.Sc.(Ph.)~~, ~~M.E.(P.H.), D.P.H., Dr.P.H~~., ~~D.M.C.W., D.I.H., D.C.H~~., ~~D.N~~., D.O.M.S., etc.	Existing college for both graduate and Post-graduate studies.
3	1835	Madras Medical School.	Madras	Government	Apothecary grade Dresser etc.	Upgraded to college 1850
4	1845	Grand Medical College.	Bombay	Do	M.B.B.S., M.D., M.S., D.Sc., M.Sc., Ph.D., D.Sc., D.O.R.L., D.D., D.Hy., D.P.H., D.G.O., D.P.M., D.A., D.V.D., M.C.P.S., F.C.P.S.	Existing college for both graduate and Post-gradua te studies.
5	1846	Hyderabad Medical School.	Hyderabad Deccan.	Native State	Diploma of Hakim, Hospital Assistant ; 1901—L.M. & S., L.M.P. ; 1927 onwards—upgraded to M.B.B.S.	1927—School abolished
6	1850	Madras Medical College.	Madras	Government	Initially L.M. & S. 1874—M.B. & C.M. ; Now—M.B.B.S., M.D., M.S., D.L.O., D.B.O., T.D.D., B.S.Sc., L.P.H., S.I., L.P.A., D.V., B.Sc. (Pharm). Q	Existing College of graduate and Post-graduate studies.
7	1854	Agra Medical School	Agra (U. P.)	Government	Initially Military Med. Asst. Hosp. Asst., Later L.S.M.F. and M.S.M.F.	1947—abolished
8	1860	King Edward Medical College.	Lahore (W. Punjab).	Govt.	M.B.B.S., M.D., M.S., D.L.O., D.D.S., D.M.R.E., D.O., M.Sc. (Physiology).	Now in Pakistan

Ser. No.	Year founded	Name of the Institution	Location	Financed by	Courses, degrees and diplomas	Present status
9	1873	Campbell Medical School.	Calcutta	Govt.	V.L.M.S., L.M.P. ; 1916—L.M.F.	1954—School section abolished
10	1874	Dacca Medical School School.	Dacca (E. Pakistan).	Govt.	V.L.M.S. ; 1895—6—L.M.P. ; 1916—L.M.F.	Now in Pakistan
11	1874	Temple Medical School	Patna (Bihar)	Govt.	L.M.P.	1925—abolished
12	1875	Orissa Medical School	Cuttack (Orissa)	Govt.	L.M.P.	1947—School course abolished
13	1873	King Edward Hospital Medical School.	Indore (M.B.)	Native State (now Govt.).	H.A., S.A.S. ; Later L.M.P., L.M.F. ; Later L.C.P. & S.	1951—School course abolished
14	1873	Byaramyoo Jeejibhoy Medical School.	Poona (Bombay)	Govt.	Initially H.A., S.A.S. ; Later—L.C.P. & S., L.M.F.	1946—School course abolished
15	1879	Byaramyee Jeejibhoy Medical School.	Ahmedabad (Bombay).	Govt.	Do	Do
16	1881	Medical School	Hyderabad (Sind).	Govt.	Initially H.A., Later Asst. Surgeon ; 1917—L.C.P. & S.	Now in Pakistan
17	1886	Calcutta School of Medicine.	Calcutta	Private	L.C.P. & S.	1916—Under-graduate course abolished.
18	1887	Medical School	Vellore (Andhra)	Private	Hospital Asstt.	1902—closed
19	1887	Medical School	Tanjore (Madras)	Municipality	Hospital Asstt.	1933—School abolished
20	1894	Women's Christian Medical College.	Ludhiana (Punjab).	Missionary	L.S.M.F.	1953—School course abolished
21	1895	College of Physicians and Surgeons of Bengal.	Calcutta	Private	...	1903—abolished
23	1900	Christian Medical School.	Miraj (Bombay)	Missionary	L.C.P. & S.	Last student completed the the course in 1955.
24	1903	Stanley Medical School.	Royapuram	Govt.	Initially H.A. ; 1912—L.M.P.	1938—School course abolished
25	1911	King George's Medical College.	Lucknow (U.P.)	Govt.	M.B.B.S., M.D., M.S., D.M.R.E., D.G.O., D.L.O., D.T.D., D.O.M.S., D.C.H., B.D.S., D.Orth.S.	Existing college for graduate and Post-graduate studies.
26	1913	College of Physicians and Surgeons.	Bombay	Govt. control	L.C.P. & S., M.C.P. & S., F.C.P. & S., Condensed course for L.M.P.'s.	Existing college reorganised as graduate standard.

Ser. No.	Year founded	Name of the Institution	Location	Financed by	Courses, degrees and diplomas	Present status
27	1914	Robertson Medical School.	Nagpur (M.P.)	Govt.	L.M.P.	Still running ?
28	1915	Lady Hardinge Medi- Medical College for Women only.	Delhi	Govt. managed	M.B.B.S.	Graduate College
29	1916	R. G. Kar Medical College (Old name —Carmichael Med- cal College	Calcutta	Private	M.B.B.S., M.D., M.S., M.O., D.G.O., D.O.M.S.	Existing College for graduate and post-graduate studies.
30	1917	Medical School	Bangalore	Native State now Govt.).	L.M.P.	1955—School section abolished
31	1918	Medical School (first started in 1887) but closed.	Madura (Madras).	Govt.	L.M.P	1928—closed
32	1918	Missionary Medical School for Women.	Vellore (Madras)	Missionary & Govt.	L.M.P.	1942—School course abolished
33	1920	Medical School	Amritasar (Punjab).	Govt.	Upto 1918—M.P.L. 1918—L.S.M.F. 1938—L.MS. Dispensary & Dressers course.	1943—School course abolished
34	1921	Topiwala National Medical College.	Bombay	Private	L.C.P. & S.	1948—School course abolished
35	1921	Nationai Medical Institute (alies Jatiya Ayurvinjan Vidyalaya).	Calcutta	Private (also Govt. Muni cipal Grants).	L.M.F.	1948—School course abolished
36	1922	Bankura Sammilani Medical School.	Bankura (W. Bengal).	Private	L.M.F.	1952—abolished
37	1922	Ronaldshay Medical School.	Burdwan (W. Bengal).	Govt.	L.M.F.	1955—abolished
38	1922	School of Tropical Medicine.	Calcutta	Govt.	L.T.M. & D.T.M. (now D.T.M. & H.).	Postgraduate College

Ser. No.	Year founded	Name of the Institution	Location	Financed by	Courses, degrees and diplomas	Present status
39	1923	Women's Medical School.	Agra (U.P.)	Govt. & Dufferin Fund.	L.S.M.F.	1947—School abolished
40	1923	Calcutta Medical School.	Calcutta	Private	L.M.F.	1948—School course abolished
41	1923	Lady Willingdon Q Medical School.	Madras	Govt.	L.M.P.	1938—abolished
42	1924	Lytton Medical School.	Mymensingh (E. Pakistan).	Govt.	L.M.F.	Now in Pakistan
43	1924	University Medical College.	Mysore	Native State (now University).	M.N.B.S., T.D.D., M.Sc. (Biochem).	Graduate College
44	1924	Medical School	Coimbatore	Govt.	L.M.P. (?)	(?) 1930—abolished
45	1925	Darbhanga Medical School.	Laheriasarai (Bihar).	Govt.	L.M.P.	1946—School course abolished
46	1925	Prince of Wales Medical College.	Patna (Bihar)	Govt.	M.B.B.S., M.D., M.S., Ph.D.	Existing graduate & Postgraduate studies.
47	1925	Seth Gordhan Das Medical College.	Bombay	Private & Municipality.	M.B.B.S., M.D., M.S., Ph.D., D.O., L.C.P.S., M.C.P.S., & F.C.P.S.	Offers both graduate & post-graduate courses.
48	1927	Osmania Medical College.	Hyderabad, Deccan.	Native state later Govt.	Initially—L.M.S., L.M.F., 1927—M.B.B.S.	Graduate College
49	1930	Chittagong Medical School.	Chittagang (E. Pakistan).	Govt.	L.M.F.	Now in Pakistan
50	1930	Jackson Medical School.	Jalpaiguri (W. Bengal).	Govt.	L.M.F.	1947—School course abolished. Now being utilised for pharmacy.
51	1932	All India Institute of Hygiene & Public Health.	Calcutta	Govt. (building & equipment by Rockefeller Foundation).	D.Sc., D.Phil., D.P.H., L.P.H., D.M.C.W., D.M.C.H., D.C.H., D.I.H., C.P.H.N., M.E.(P.H.), D.N., D.D., Certificate in Lab. Technician, Health Education, Statistics, M.&C.W., Nutrition, etc.	National and International training centre in post and undergraduate public health specialities.

Ser. No.	Year founded	Name of the Institution	Location	Financed by	Courses, degrees and diplomas	Present status
52	1934	Ludhiana Medical School for men (alias Arya Medical School).	Ludhiana (Punjab).	Private	L.S.M.F.	1947—abolished
53	1936	Gajra Raja Medical College.	Gwalior (M.B.)	Native State (now Govt.).	M.B.B.S., M.D., M.S.	College for both graduate and postgraduate studies.
54	1938	Stanley Medical College.	Royapuran (Madras).	Govt.	M.B.B.S., Ph.D., M.S., Dip. (Phan), M.Sc. (Nut.), Ph.D. (Anst.).	Do.
55	1939	Sorojini Naidu Medical College.	Agra (U.P.)	Govt.	M.B.B.S., M.D., M.Sc., etc.	Do.
56	1942	Christian Medical College.	Vellore (Madras)	Missionary (Govt. aided).	M.B.B.S., D.Sc. (Nursing), Dip. Thoracic Surgery.	Graduate College
57	1943	Medical College	Amritsar (Punjab)	Govt.	M.B.B.S., D.O.M.S., D.T.D.	College for graduate and post-graduate studies.
58	1944	Sriram Chandon Bhanj Medical College.	Cuttack (Orissa)	Govt.	M.B.B.S.	Graduate College
59	1946	B. J. Medical College	Poona (Bombay)	Govt.	M.B.B.S.	Do.
60	1946	B. J. Medical College	Ahmedabad (Bombay).	Govt.	M.B.B.S.	Do.
61	1946	Darbhanga Medical College.	Laheria-sarai (Bihar).	Govt.	M.B.B.S., M.D., M.S.	College for graduate and post-post-graduate studies.
62	1946	Guntur Medical College.	Guntur (Andhra)	Govt.	M.B.B.S.	Graduate College
63	1946	Topiwala Medical College.	Bombay	Private	M.B.B.S.	Do.
64	1947	Swai Man Singh Medical College.	Jaipur (Rajasthan).	Now Govt.	M.B.B.S., M.D., M.S., M.Sc., (Anat. Physiology or Pharm).	College for both graduate and postgraduate studies.
65	1947	Lake Medical College	Calcutta	Govt.	Lake Medical College Calcutta	Govt.
66	1947	Medical College & Hospital.	Nagpur (M.P.)	Govt.	M.B.B.S. (also training given for auxiliary Health services).	Graduate College

Ser. No.	Year founded	Name of the Institution	Location	Financed by	Courses, degrees and diplomas	Present status
67	1948	Assam Medical College College.	Assam Medical (Assam).	Dibrugarh Govt.	M.B.B.S.	Graduate College
68	1948	Nilratan Sarkar Medical College.	Calcutta	Govt.	M.B.B.S., M.D., M.O., M.S., D.G.O., etc.	College for both graduate and postgraduate studies.
69	1948	Calcutta National Medical Institute.	Calcutta	Private	M.B.B.S.	Graduate college
70	1949	Medical College	Baroda (Bombay)	Govt.	M.B.B.S.	Do.
71	1951	Government Medical College.	Trivandum (T. C. State).	Govt.	M.B.B.S. (also Health Inspectors Course).	Graduate college
72	1951	Mahatma Gandhi Medical College.	Indore	Govt.	M.B.B.S.	Do.
73	1953	Kasturba Medical College.	Manipal (S. India).	Private Academy	M.B.B.S.	Do.
74	1953	Government Medical College.	Patiala (Pepsu)	Govt.	M.B.B.S.	Do.
75	1954	Medical College	Madura (Madras)	Govt.	M.B.B.S.	Do.
76	1955	Bangalore Medical College.	Bangalore (Mysore).	Private	M.B.B.S.	Do.
77	1955	Medical College	Bhopal	Govt.	M.B.B.S.	Do.
78	1956	All India Institute of Medical Sciences.	Delhi	Governing Body (Govt. International aid).	M.B.B.S., etc.	College for both graduate and postgraduate studies.
79	1956	All India Institute of Mental Health.	Bangalore	Govt.	D.P.M. & D.M.P. (course will start from Jan., 1957).	Postgraduate studies
80	1956	Institute of Child Health.	Calcutta	Private (Govt. aided).	D.C.H.	Postgraduate studies in child health.
81	1956	Bankura Sammilani Medical College.	Bankura (W. Bengal).	Private	M.B.B.S.	Just revived

Training of Auxiliary Health Personnel

Dr. S. C. Seal

(1) Dental Education

Dentistry is one of the neglected subjects of study in practically all Indian Universities and it has not yet entered into the regular Personal Health Services in any state except perhaps as a part of School Health Service in certain places. There are at present four Dental Colleges in India, viz., (1) the Calcutta Dental College and Hospital, (2) the City Dental College, Calcutta, (3) the Nair Hospital Dental College, Bombay and (4) the Currimbhoy Ebrahim Dental College, Bombay. The first and the last are supported by the Governments of West Bengal and Bombay respectively, while the other two are under private management.

The Calcutta Dental College and Hospital:

The college was founded in 1920 by the Hon'ble Dr. R. Ahmed, Minister of West Bengal. It was brought under the Direct Control of the Government in 1950. At present it is only affiliated to the State Medical Faculty of West Bengal and the diploma of L.D.S. is awarded to the successful candidates after studying for 4 years. This qualification is recognized under the schedule of the Indian Dentists Act (Act XVI of 1948) and is registerable in the Republic of India. The entrance qualification is First Division Matriculate or School Final Examination but I.Sc.'s are preferred. The course is of 2 years in case of qualified medical practitioners. The subjects taught are: general anatomy including dissection, physiology, medicine and surgery, pathology and bacteriology and dental subjects proper. Teaching has been organised in collaboration with the Nilratan Sarkar Medical College which is across the street. New building are being constructed to soon start the B.D.S. Course of the Calcutta University. The Indian Dental Council has preferred a uniform curriculum of study for the B.D.S. Degree throughout the country. The universities other than Calcutta which confers B.D.S. degree are Madras, Lucknow and Bombay.

Other Dental College:

The City Dental College at Calcutta and the Nair Hospital Dental College at Bombay are privately managed. The former runs a two years course and offers a certificate of C.D.P. (Certified Dental Practitioners), the qualification for admission being under-matriculation. The latter, now taken ever by the Bombay Municipal Corporation runs a four year's course and offers a diploma of L.D.Sc. and the examination is conducted by examiners appointed by the Bombay Government. The minimum qualification required for admission is Matriculation of an Indian University or its equivalent. This institute is also affiliated to the Bombay University for the B.D.S. degree. Each of these colleges admits about 25-30 students each year. The Currimbhoy Ebrahim Dental College, Bombay, perhaps admits lesser number of students than any of the above colleges.

Thus it will be seen that the facilities for Dental education are very insufficient in the country and no facilities exist for postgraduate training in Dentistry. The number of qualified dentists in India is not definitely known but it is not likely to exceeded 12-1300. The number of persons with advanced training in foreign countries is also very limited. An essential step for the development of undergraduate and postgraduate training centres in dentistry in India is the provision of trained teachers for which facilities should be provided by the Government through scholarships and fellowships and through encouraging postgraduate studies in the proposed graduate colleges under the universities.

(2) Training of Pharmacist

Three types of training are available in the country namely, (1) the compounder or dresser qualification, (2) the chemists and druggist qualification and (3) degree in pharmacy. Even so, the existing facilities for these disciplines are still insufficient.

(1) *The Compounder or Dresser :*

The modern medical education in India started with the training of Dressers, Compounders and Hospital Assistants in the 18th century, while the training for medical men commenced not earlier than the 19th century.

The period of training for a compounder's qualification varies from one to three years and the qualifications demanded for admission into the courses is not uniform in different states. In some states, candidates with Matriculation or the Final School leaving certificate is required while in others candidates completing Middle School Examination are admitted. Procedures for training also differs from state to state. In some, the Preliminary training is given in the district headquarters hospitals and then given an intensive course in some central hospital. In West Bengal, in 1928, the training period for compounders was increased to two years, of which the first year had to be spent on some specified institution (Campbell Hospital), where the candidate received instructions in materia medica, the laws regulating the sale of poisons and practical pharmacy. This was followed by an examination after which the second year was spent in apprenticeship in a chemists and druggists establishment or at a hospital. Now the Government of West Bengal has opened an institution for pharmacist training at Jalpaiguri in the medical school which was abolished in 1947.

In Madras, the candidates are required to have the basic qualification of Secondary School leaving certificate. They are given practical training for 9 months in certain selected district headquarters hospital and later an intensive course lasting for 3 months at the Madras General Hospital. They are also given training in First Aid.

(2) *Chemists and druggists :*

The preliminary educational qualification for entry to the course is a School Leaving Certificate and the period of training lasts for two and a half years. This includes apprenticeship with a recognised firm of pharmaceutical chemists during the last year of study. The subjects included in the curriculum are chemistry, both organic and inorganic, botany, pharmaceutical chemistry, materia medica and pharmacy.

(3) *Degree in Pharmacy Course :*

The Benaras Hindu University was the first to inaugurate a course of graduate pharmacists in 1934 and since that time other universities have also provided similar training facilities. The Andhra University instituted the study of Pharmaceutics as a special subject in the curriculum for the B.Sc. (Honours) and M.Sc. Degree in Chemical Technology. The Calcutta University has opened a new course of Pharmaceutical Chemistry for M.Sc. students. The Bombay University have also opened a new course in Pharmaceuticals in their Technological Faculty. The Madras University has inaugurated a two years course, B.Sc. (Phar.), for which students who have passed the Intermediate examination in Science are eligible. Thus graduate instruction in pharmacy is of two types, one which deals mainly with the technical side of it and the other which stresses the pharmaceutical side.

Recently, in Ahmedabad, a college of Pharmacy (Lallubhai Motilal College of Pharmacy) has been established.

---

(3) Nursing Education

Nursing education in most of the states is organised in general hospitals or in hospitals attached to the teaching institutions and runs pari passu with the apprenticeship in hospital nursing. As such the number of trainees is restricted only to that of the vacancies in the apprentice nursing positions. On the other hand, any developmental scheme for the increase of

hospital system, such as in the rural areas, Community Project Administrations, urban development, schemes, is handicapped for want of nurses. Four important reasons which indirectly caused serious inadequacy of nursing training in the recent past are: (1) almost universal marriage of girls within 20 years of age, (2) disinclination of the family girls to take up nursing largely due to influence of tradition, (3) language difficulties, the education being organised in English, and (4) unattractive pay, status and service conditions, (5) absence of existing amneties and social attitude towards nursing in the rural areas. In some places therefore male nurses are trained and the trend is towards opening the profession to all, irrespective of sex. The conditions, however, are now changing towards the acceptance and popularisation of nursing as a profession, and it seems the problem is the dearth of proper training institutions in the country.

There is a great shortage of nurses in the country much more than the medical personnel. The number of nurses employed in public medical institutions and the position regarding the nursing facilities in the hospitals as revealed by the report of the Bhore Committee, are extremely unsatisfactory. Against the estimated requirement of 80,000 the present available strength in the country is only 22,000. The proportion of beds per nurse in this country is 20:1 as against 2.5:1 in the western countries. In other words, hospitals in India are seriously understaffed as far as the nursing is concerned.

The pay status and general service conditions of the nurses also require considerable improvement if proper type of women is to be attracted in adequate numbers.

Training Schools:

The training schools for nurses are not of a uniform standard. Many of them donot come up even to the minimum standard. As already mentioned the services of the nursing students are used to supplement the work of the nursing staff of the hospitals concerned, and they are treated rather as an employee of the hospital than as students with the result that the pupil nurses have little time to or opportunities for recreational and cultural activities as they are fully engaged in the routine hospital duties.

For further information regarding Nursing Education the readers are referred to the special note on this subject by Mrs. U. Gupta, published in this Souvenir.

---

(4) Public Health Nursing Education

In countries where health services are more advanced than in India, a new type of female worker is employed known as the Public Health Nurse, who is able to take part in the extension of preventive health work in all fields of public health to the homes of the people.

The training of such personnel includes the course for sick nursing and to midwifery, with special emphasis laid throughout the period of instruction, on the preventive and community aspects of health administration. She will also have a fairly good knowledge about the early symptoms and signs of diseases, and she can advise and urge adequate medical attentions and carry out simple treatment and adopt methods of prevention and control. Thus though her work will be auxiliary to that of medical personnel, she will be closer to the public than the medical men and will function both in the fields of medical care and of prevention. She will routinely visit the homes of the people and will detect sickness, help them to come to the clinics or hospital give them sick nursing and maternity care and advise where necessary and help the families in carrying out the treatment and with advice for preventing the spread of the disease. In other words their employment will, on the one hand, improve the service to the community and reduce the demand on the medical personnel on the other, thus effecting the ultimate economy on the cost of health administration. All community health program can be dissemenated through them and they can serve better in school health service. Being always close to the community they will also serve as the best teacher of health.

India with the intensification of her development programmes in the public health fields on

modern lines will require the services of this general type of progressive works in increasing numbers.

Duties and functions of the Public Health Nurse:

(1) To work with the family and the community and not with the sick individuals in a hospital.

(2) To assist the medical officer of health in the planning and organisation and execution of health programmes such as:

(a) Maternity & Child Welfare.
(b) School Health Services.
(c) Family Health Service.
(d) Communicable disease control (including Tuberculosis).
(e) Home care of the sick including simple treatment and food preparations etc.

(3) To do nursing when necesary and to supervise and guide others engaged in preventive work.

(4) To teach health habits and to develop in them a better attitude and interest towards public health.

(5) To help families to meet their recognized social needs.

The Public Health please is responsible to the Medical Officers for all phases of her work.

Training of Public Health Nurse:

A training course on the subject is only available at the All India Institute of Hygiene and public Health, Calcutta, and is at present being operated under the joint M.C.H. Scheme of the W.H.O., the UNICEF and the Government of India.

The number of students admitted is 30 for each session. The course is organised for one academic year and includes didactic lectures, demonstrations and actual participation by the students in the field work. The subjects included in the course are: (a) Health administration and Preventive medicine, (b) Communicable disease control, (c) Sanitation of environment including food and milk, (d) Elementary vital statistics, (e) Nutrition and health, (f) Public Health Nursing—objectives and functions, home visiting, maternal and child health, school health, special disease care such as T.B., V.D., etc., (g) Industrial health, (h) Psychology and mental health, (i) Health education, (j) Fields of social welfare, (k) Training of personnel—nurses, midwives, dais etc., (l) practical work in every field including urban and rural areas, (m) visits to different institutions, seminars and discussions etc.

---

(5) Training of Health Visitors

The total number of Health Visitors in the country has not yet crossed 1,000. Since the establishment of the first training school at New Delhi institutions have been started in Calcutta, Madras, Lucknow, Poona, Bombay, Nagpur, schools for training of some 100 pupils or more Mysore and Hyderabad. There are now 9 or 10 annually. It is considered that at least one The qualification for admission varies from health visitors will be required to supervise the work of midwives. The estimated minimum requirement of the latter is that for 100,000 midwives at least 20,000 Health Visitors would be needed in the country. If, however, she is also employed for Tuberculosis, V.D., Leprosy, School place to place and so also the periods of training, syllabus and the language in which the instruction is given. The general education required is as low as third class of the Anglo-vernacular school in Poona and as high as Matriculation or its equivalent in Madras, Delhi and Calcutta. The authorities of certain schools insist upon midwifery diploma and prefer a certificate for general nursing before admission. The period of training extends from 9 months to 2 years. The students are taught in English or in local languages. The examination is held by the Provincial Nursing Council or by the authorities appointed by the State or Central Government.

The course of training includes work in maternity and child welfare centre, field training in rural and urban health centres, and training in general hygiene and preventive health work. Her main duties are to supervise the domicilliary work of midwives and trained dais, homevisiting for antenetal, natal and postnatal care of the mothers and care of infants and toddlers.

(6) Training of Midwives

The training of midwives started in India about a century ago within a few years of the establishment of hospitals. Although there are more than 12,000 certified midwives and 1,000 assistant midwives on the registers maintained by the Nursing and Midwives Council there are about 7,500 or 8,000 practising midwives in the country and approximately 300 qualifying every year. But there are about 10 millions births every year requiring at least 100,000 midwives on the basis of supervision over 100 births a year. Lack of skilled service by qualified midwives plays an important part in the prevalence of high rate of maternal and infant mortality in the country. There is thus an urgent need for making available as quickly as possible an increasing number of the class of trained workers for midwifery service. As an interim measure, however, arrangement for training of indigenous *dais* would be of great economic as well as social and preventive value.

Course of Training:

The period of training varies in different states. In the case of certified nurse the midwifery training extends over a period of 6 months to one year. For direct training as midwife the course varies from one to two years. The inclusion of domiciliary practice in training is by no means general though it should be compulsory. The examination is conducted by a Board Nurses and Midwives Council concerned.

As in the case of pupil nurses the training centres for midwives makes use of pupil midwives to make up shortage in the personnel of the hospitals concerned. Also adequate facilities for antenatal instruction and sufficient amount of clinical material are not available equally in all the places where the training of midwives is undertaken. Taking into consideration the number of beds, the total number of doctors and other requirements for the satisfactory training of pupil midwives the number actually admitted in certain institutions is in far excess of that which can be properly trained.

---

(7) Training of Dais

'Dai' in the Indian language is an abbreviation of the word "Dhatri" (Orig: Sanskrit) meaning a female attendant who holds and rears the infants (Mid-wife). In India this has come to pass as a profession which has been existent for centuries, perhaps as far back as the history can trace. She learns the traditional technique of attending the delivery cases from her predecessors (relatives) and by her personal experience. She generally uses the crude-procedure without any care for infection and knowledge of rigional anatomy and physiology. However, though ill-paid and professionally inferior in society she has been considered as an essential part of the community. But unfortunately no attempts were made in the past to improve their professional technique and knowledge. In a vast country like India where the total need for trained mid-wives reached a target figure of 100,000 or more, any conceivable extension of training facilities will not help to train up these numbers within a reasonable period of time. The only solution for the time being is to utilise these *Dais* who are found almost in every village in India, by organising a course of basic training for them. Every effort should therefore be made to make available a type of service which, although it may not be of high standard that modern health administration demands will certainly be an improvement on what the vast majority of mothers in India are able to obtain during their confinements.

Training:

The training of Indigenous Dais has been undertaken in many states now, but it is not easy to wean them from her normally objectionable methods and traditional beliefs. The past attempts had largely failed because of:—

1. The reluctance of such persons to undergo the training.
2. Financial difficulties to meet the expenses required.
3. Lack of adequate provision for the supervision of the work of those who had been trained.
4. Lack of the periodical refresher courses.
5. Some difficulties in re-habilitating them after training.

All these difficulties are now being overcome, and partly due to economic reasons and partly to the improvement of the social conditions larger numbers of literates (as in West Bengal) are now coming forward for training. The Health Centres or the Community Project Administration Centres are the places where such training should be extensively organised as a routine function.

---

(8) Training of Sanitary Inspectors

Sanitary inspectors or public health inspectors as designated in some of our states, have been for more than a quarter of a century the pivot of preventive public health work in the rural areas of India. Unfortunately the duties imposed on them were so many, the area and population to be covered so large and the rural health problems including that of sanitation and epidemic such as Malaria, Cholera, Smallpox, Diarrhoea etc., so intensive and varied that the employment of such public health personnel in the rural areas could perhaps make no impressionable differences in the health conditions of the rural India. Even so, the importance of such personnel in the rural health services cannot be in any way minimised.

There are altogether about 4,000 Sanitary Inspectors now working in the country. But in the context of the development of plans evisaged by the Planning Commission and the health departments of the Central and the State Governments 20,000 Sanitary Inspectors would be required. But the facilities for the training of this kind of personnel does not exist in some states of our country like Delhi, C.P. and Assam. In Bihar and West Bengal the course has been held in abeyance. In the latter province another new course for a sub-standard type of health workers under the name of "Health Assistants" has been recently introduced. These workers are mainly employed in the Union Health Centres. In Orissa and U.P. the course is said to be held only as and when the need of it is felt. The only states where the course is held regularly are Madras, Bombay and the Punjab. In fact the total training facilities in the country at present is roughly for about 300 Sanitary Inspectors each year, the number actually qualifying being about 200. If all the States make provision for the training of Sanitary Inspectors the total number of candidates which can be admitted for training each year may rise up to 1,000 and then it may be possible to supply the needs of the country as the various new schemes are put into operation.

Training :

There is no fixed standard followed all throughout the country for the training of Sanitary Inspectors. The period of training varies from 6 weeks in Bihar to one year in Madras and Orissa. The basic qualification necessary for a candidate before he is admitted for training is also not uniform throughout the country. While in Madras and West Bengal the Secondary School leaving or the Matriculation Certificate is required (sometimes I.A. or I.Sc.'s also apply), initial qualification in certain other states is under-matric. The syllabuses followed are also not uniform. In most of the places the existing syllabus lay greater emphasis on the theoretical rather than on the practical aspect of the training. Furthermore, greater consideration is given to urban than the rural health problems. "But India requires a large number of Sanitary inspectors who can participate effectively in the modern hygiene and rural health conditions and adequate consideration will have to be given to this requirement in evolving a satisfactory uniform course of training for this class of health workers" (Bhore Committee).

(9) Training of Vaccinators

In India the only vaccination which is compulsorily given is the Smallpox vaccine. For this purpose every state, municipality or town employ a large number of vaccinators partly on temporary and partly on permanent basis. Vaccination is being performed during the 6 or 7 months in a year more intensively than in the rest of the period. Thus a large number of temporary vaccinators is only employed every year for economic advantage. Unfortunately very little facilities are available in the country for a systematic training of these vaccinators with the result that a large number of vaccination is performed every year by a group of undertrained or untrained workers. This may be one of the reasons why inspite of the record of 94% to 98% of the population being vaccinated the epidemic condition is still persisting in the country.

Training :

The basic educational qualification required for the vaccinator's training varies in the different states but it is usually the middle English or the middle Vernacular standard, although some Matriculates are also coming forward in certain states due to unemployment problem. The duration of training ranges from 3 to 10 months. In most of the states this training includes instructions in elementary hygiene so as to fit the vaccinator for assisting in public health work. Practical training in the field is given by the senior vaccinators under the supervision of medical officers of health or by the latter himself. In some of the states additional training is also given at the local vaccine institute where vaccine lymph is manufactured.' In cities like Calcutta certain organisations like R.W.A.C. and Ambulance Corps etc., often organise training course for vaccinators.

It is very desirable that the standards of training for vaccinators in different states are raised and made uniform. It can however be envisazed that with the extension of public health service in the rural areas through health centres or community project extension services the need for employment of separate vaccinators will be reduced to the minimum, as it will be included in the functions of maternity and child welfare workers who will take care of the infants and toddlers. At a later age period the school or the college medical service will take care of the individuals attending schools and colleges and the adults will be taken care of by the general health organisation, voluntary or semi-voluntary organisation, Industrial Health Services or other employers.

---

(10) Training of Technicians

Generally three categories of persons are employed for laboratory work, namely laboratory attendent, laboratory assistant and laboratory technician. The types of laboratories in which they are usually required are: (1) clinical, (2) bacteriological, (3) chemical, (4) biochemical, (5) public health, (6) pharmaceutical, (7) biological, (8) radiological, (9) epidemiological, (10) physical therapy, (11) occupational therapy, (12) dietetics, (13) dental hygiene, (24) technological, etc. In fact their services are extensively needed in all kinds of technical laboratories. But there is a great dearth of trained personnel, particularly the technicians. In fact there are few institutions in the country to train technicians of the types that are needed in large numbers as auxilliaries to the medical services. The usual practice is that to meet the requirements a person with some basic qualification of the non-matric, matric or I.Sc. is taken as an apprentice and he is expected to get his training by taking part in day to day working of the laboratory. Attendents are generally taken as a crude recruit from among the just literates who learn to assist the laboratory work by experience. Some of the laboratory assistants when they become senior are promoted to the status of Laboratory Technician.

In recent years, however, some facilities for the training of laboratory technicians have been organised in a few institutions in India such as, the All India Institute of Hygiene and Public Health, Calcutta, the Mission Institutions at Vellore, Madanapalli and Allahabad. A register of trained laboratory technicians has been opened. The minimum qualification for admission is Matriculation or School Final Certificate, the course of study being not less than nine months, except at the All India Institute of Hygiene and Public Health, Calcutta where an intensive course is given in six months for 20 students only, but the minimum qualification required for admission is Intermediate Science. The candidates are given a fairly complete practical training for the types of work connected with the bacteriological, biochemical and pathological laboratories. At Calcutta, in addition to the above the training includes public health laboratory practice. The rules of the Christian Medical Association, however, require that the training should be given in a hospital with a well-equipped laboratory, and a minimum of 2,000 in-patients a year and a daily average of 100 in-patients. The number of students alloted to each member of the teaching and demonstrating staff is limited to two only.

A training course for Radiographer is given at the Government Radiological Institute, Madras. The course which is open to those who have passed the Final School leaving examination with science subject or the Matriculation or its equivalent, and qualifies the trainee for Diploma of certified Radiological Assistant (C.R.A., Madras). The period of training lasts for one year and consists of three parts: Part I comprises instruction in elementary anatomy, physiology and pathology, followed by Part II which includes radiography, radium and X-ray treatment and electrology. Part III of the course lasting for 3 months is devoted to practical training. An examination is held at the end of each part.

Training facilities for most of the other types of technicians particularly for physical therapy, dietetics, occupational therapy, and dental hygiene exist in the country. The Indian Council of Medical Research recently discussed the course of training and suggested extension of training of Laboratory Technicians in different institutions of the country.

---

(11) Training of Medical Social Workers

With the advancement of knowledge in Medical Science the cencept of Medicine as a Social Science and the importance of Social factors (social, economic and cultural forces etc.) in the causation and perpetuation of disease in the community are being increasingly realized. Thus for the effective administration of medical care the need for the services of Social Workers cannot be too emphasised. Bearing on this idea the medical educationists in the country have felt the necessity of reorientation of the teaching of medicine in the undergraduate course by introducing the subject of Preventive and Social Medicine in every undergraduate College. But little ararngement exist in the country to-day for the proper training of Social Workers which will be now in increasing demand.

At present the institutions in India which provides facilities for the training of Social Workers are (1) The Sir Dorabji Tata School of Social Service in Bombay, (2) The Baroda School of Social Work and (3) All India Institute of Social Work and Business Management at Calcutta.

(1) The Tata School has, on the whole, followed the American model. It has a two years course and provides child welfare, adult delinquency and industrial and labour problems. There is also a course which includes medical and psychiatric social work and instruction on social case work and family case work. But to properly fit in the course for medical social work the school should add instruction in certain special diseases like T.B.V.D., Leprposy etc.

(2) The Baroda School gives professional training to students of social work and is a post-graduate institution. Its objective is to help students to understand social, economic and cultural forces at work in society, to teach

principles and techniques of social work in theory as well as in practice. The course actually consists of class room as well as field work and it embraces a wide variety of social aspects such as Man & Society, Evolution of Social Work, Human Behaviour, Social Pathology, Case work, Group work, Community Organisation, Medical Social Work, Rural Social Work, Family and Child Welfare, Problems of Industrial Labour etc. Field work is undertaken in industrial concerns, mills, hospitals and remand houses. The faculty has also its own rural centre.

3) The Institution at Calcutta is a postgraduate institution under the University of Calcutta with facilities to train labour officer, administrators and the higher grade officers on social work. The curriculum lays great emphasises on Social and Preventive Medicine in practically all its aspects e.g. Food and Nutrition, Infection, Control of diseases, Environmental Sanitation and Health Administration etc. in addition to the subjects like Sociology, Applied Economics, Statistics, Law relative to Industries, and Personal management and Industrial relations.

There is however, no course available anywhere in the States for the training particularly of Medical Social Worker. A provision of adequate facilities for this constituent of medical auxiliaries in the country is therefore all urgent necessity. It is needless to say that this is not only required for the improvement of general efficiency of all larger hospitals and special clinics (T.B., V.D., Leprosy etc.) in India but also for the training of the medical students in public health and Social and Preventive Medicine on proper lines.

Social and Preventive Medicine

Dr. Donald T. Rice

Christian Medical College, Ludhiana

We who are teaching social and preventive medicine in the medical colleges rejoice in the formation of the Indian Public Health Association. Through this Association with others in the field of public health, we can learn better ways to accomplish our objectives. And to a great extent, the future of public health in India depends on the way in which we carry out our functions. We, therefore, deem it a great opportunity to join this new organization and help the nation progress in this fast growing field of public health.

The teaching of social and preventive medicine is one of the newest and most rapidly developing areas of public health. In this short article we cannot give a full discussion of its philosophy, subject matter and methods, but we would like to briefly discuss some of the important opportunities and specific difficulties that confront us. Let us discuss them in order of their occurrence in the medical student's life, from the premedical years on through post-graduate training.

Perhaps the greatest difficulty we face is that most of the students are admitted into medical college with a deplorably *inadequate background in the social sciences*... In their high school days some have taken a course in civics, but from that time forward they have concentrated on science, that being our prerequisite. Certainly our students need this science background, but we are now discovering the vital need for a grounding in sociology and psychology as well. Since there is a complete separation of arts and sciences in the college curriculum, this would be impossible to arrange without adding another year or two to the premedical course. Adding these years would give us the distinct advantage of having maturer and better rounded students with whom to work.

We proudly profess that medicine is both an art and a science, but students receive 99% of their training in science and are expected to develop the art without instruction or guidance. Social sciences in the premedical course and more social medicine in the medical college curriculum would contribute to the development of this art.

Another difficulty is that students have had little *training in thinking*. In their earlier education over-reliance on memorization of material from notes or textbook has not encouraged thinking. The medical field is so broad that there is no possibility of mastering even a portion of it by memorizing pages of facts. Doctors have to know how to think as well as to remember. They must learn certain principles and be able to apply them to innumerable situations. If we are to produce doctors who can practise the art as well as the science of medicine, this process of training the student to think and his introduction into psychology and sociology must start during the premedical years.

In the accepted curriculum for social and preventive medicine the courses suggested for the preclinical period are: human ecology, clinical conferences, biostatistics and field surveys. We would like to comment briefly on two aspects of teaching during this period. In the first place since medical students are lacking in social science, we must first *orient them in these fields.* This would logically be included in the course in ecology when the relation of man to his social environment is considered. In the time allowed we can do little more than introduce the subject, but unless students gain a basic understanding of the principles, methods, techniques and values of sociology and psychology, they can neither comprehend the meaning of social medicine nor realize its possibilities.

Another opportunity we have during this period is that of taking the stludents out *into the*

villages so that they can become acquainted with this facet of Indian life about which they are often ignorant. This contact with "live" people gives the student relief from the constant grind of lectures, practicals and books. Furthemrore, it is an opportunity for practical experience with some of the principles of sociology and psychology.

Duirng the clinical period environmental hygiene, epidemiology and public health administration are scheduled for teaching. We call attention to three of the many important concepts which the students must grasp during this time. First is the concept of *the levels of prevention.* Whether treatment is aimed at preventing further deformity from an advancing illness, or whether the procedure is aimed at preventing a person from becoming ill, students must realize that prevention is our constant objective. Furthermore, they must realize that we as a profession, must continually strive to raise the level of our preventive efforts.

The second concept is that of the *chain of infection.* When the chain for each communicable disease is clearly in the mind of the student, his ability to determine the least difficult way to break that chain in each particular situation will increase.

The third concept is that of *multiple causation.* Because of our science emphasis, students are trained to understand bacterial or physiological etiology, but have little comprehension of the social factors contributing to illness. Training in social medicine should enable the doctor to define a patient's signs and symptoms caused by social stress, to arrange them in a logical pattern, to work them into his diagnosis, and finally, to include them in his plan of treatment. This idea of "social therapeutics" is a particularly intriguing one. Often we are able to point out the defects and the pathology in the socio-cultural pattern that cause disease, but can prescribe little in the way of practical treatment. For instance, what progress have we been able to make in eradicating the social causes of tuberculosis in India? Much research is required in the diagnosis and prevention of social ailments, but much more is necessary in the field of what might be called the "pharmacology and posology" of social therapeutics. Such research would enable us to give more satisfactory answers and prescriptions.

During internship our departments again have the opportunity to give interns a taste, and let us hope it is a good taste, of *rural life and practice.* It is our last, and perhaps our best opportunity, to challenge them with the tremendous needs of rural India. We also have the duty to show them how good modern medicine can be practised in a rural setting without the superabundance of facilities that they learn about in the medical college hospitals and laboratories.

In conclusion, we would like to mention a few of the chances we have to help our colleagues who are teaching in other departments. We should express our approval of their every effort to *incorporate prevention into their teaching.* We must ever be on the alert to point out to them the further possibilities of prevention in their various fields. And we must constantly urge them to increase the integration of this vast and complex philosophy into their instruction.

Another way in which we can help advance the all round development of our medical schools is to be constantly on the watch for *new teaching methods and aids.* Ours are new departments in which we have the greatest lattitude for experimentation with teaching methods. Their adaptation and development are our concern and contribution. Then we can encourage other departments to increase their use of the methods that have proved useful.

These are some of the unique opportunities and responsibilities that are confronting us as we develop this important field. *Social and preventive medicine must be the bridge which leads the doctors of this nation to an understanding of the philosophy of public health.* We must tackle this tremendous task with a spirit of youth and adventure and with a flexibility that allows us to incorporate into our subject matter and methods the recent advances that have been made in the fields of medical education, social medicine and public health. By so doing we can accomplish our objective of developing well rounded physicians of whom we can be proud. And this, in turn, will lead to healthier individuals, to healthier communities and to a healthier nation.

Nursing Education

MRS. U. GUPTA

Nursing Adviser, Govt. of West Bengal

Introduction:

The act of Nursing is as old perhaps as human society itself, but the idea of Nursing as a profession is barely of 100 years of age. It was not until 1.860 when Florence Nightingale founded the first School of Nursing in St. Thomas Hospital in England that modern Nursing was born. From then on the story of Nursing is one of progress and human achievement. From a mere collection of uncoordinated manual skills aimed at alleviating physical suffering only, Nursing has become a highly developed profession based on Arts and Sciences and combinding the curative, preventive and positive aspects of all modern health work. From a task in which only hearts were necessary, modern nursing has graduated into a plane where a high degree of intellectual ability and skills are necessary.

Pattern of Nursing Education:

As Medical Science advances, Nursing becomes more and more complex and the task of educating Nurses one of vital concern. The difficulties are enhanced as financial limitations in training programmes often act as serious handicaps in the progress of Nursing education.

The pattern of Nursing Education in the Country to-day falls in two categories:—1. A University Degree. 2. A Certificate from the State Nursing Council issued after training in a School of Nursing attached to a hospital.

1. The University course is in basic Nursing combining curative, preventive and positive aspects with special emphasis on teaching. It also includes instruction in Principles of Administration. This type of course runs for 4 years and leads to a B.Sc. degree which is given at the present moment by the Universities of Delhi and Madras.

2. All the other training schools for Nurses in the Country numbering about 275 are attached to hospitals in various States. Nursing Education available in these various schools are again of two types:—(1) the Certificate Course in General Nursing and Midwifery which runs for about $3\frac{1}{2}$ years and (2) Certificate in Auxiliary Nursing & Midwifery which is a course of 2 years' duration.

The minimum educational qualification for entrance into the University Schools is I.Sc. (1st Division), while to get admittance into a hospital school, one must at least be a Matriculate. To take Auxiliary Nursing, one must at least have education up to Class VI. The minimum age requirement is 17-18 years.

Post-certificate Education:

Apart from basic educational programmes as outlined above, there are programmes of post-certificate Nursing education given in a few places in India. Two most important institutions which are given courses in Teaching and Administration for Nurses trained from various hospital schools of Nursing are the Delhi College of Nursing and the Christian Medical College Hospital in Vellore. All India Institute of Hygiene & Public Health in Calcutta gives a certificate course in Public Health Nursing. The duration of all these post-basic Nursing education courses is 9-10 months.

Refresher courses:

In addition to the Post-certificate courses, there are also refresher courses given for trained Nurses in various subjects, eg. Paediatrics, Ward Administration etc. with the help of W.H.O. and UNICEF.

Problems of Nursing Education:

Nursing is one of the oldest profession in the world which has suffered most from the apprenticeship type of training. Apart from the

University Schools, all the other schools of Nursing are attached to hospitals where the student is used for service in the hospital.

1. In this pattern of Nursing Education, the educational needs of the student are sacrificed every time for the service needs of the hospital. Consequently, not only is the load heavy on the student herself, but also great limitations are placed on the curriculum and academic contents of the course itself, thus harming the very cause of Nursing Education. Out of 1095 days in the 3 years, 800 days are spent in service by the student.

2. Due to the heavy work-load and perpetual emergency situation in the hospital also, the correlation of theory and practice is on the whole poor in most schools.

3. Adds to this is the problem of equipment inadequacy which helps the student to make shift with her techniques.

4. Moreover, in such an institution an atmosphere of learning is absent, thus failing to develop in the student an educational outlook.

5. The hospitals so far being primarily concerned with curative work have failed also to develop amongst those who come out of their precincts, a preventive outlook which is the cornerstone of all modern Nursing.

Attempts at improvement:

The University type of Nursing Education although preferable, is expensive and, therefore, out of reach of most girls who come into Nursing. It would also be costly for the State if it were to prepare Nurses only in this way. Consequently, we have to keep our hospiptal schools going and going in the best way possible. How to improve Nursing Education has been a burning topic in the hearts of many of our Nursing Educators and after much study and deliberation, new subjects such as Psychology, Physics, Chemistry etc. have been added on to the Certificate course in Nursing, so that its curriculum contents are enriched. In order also to overcome the curative bias of a hospital, positive health teaching of the patient and his family and preventive aspects of disease are also now included in the Certificate courses. The ultimate object of all these reforms is in prpoducing a multi-purpose Nurse who will fit into any section of a modern health programme.

Needs of India:

There are about 17,000 Nurses in India to-day. Out of this number, about 13,000 are probably in active service. According to 2nd Plan, we need in India by 1961, 31,000 Nurses. The significance of this, of course, is that we have to more than double the number than we at present possess. In addition to this number of Bed-side Nurses, we also had ,500 Public Health Nurses or Health Visitors and 80,000 Midwives. Our population is growing and our industries are expanding, thus making an ever-increasing demand on our resources, our sense of enterprise and ability to hangle modern health problems.

Conclusion:

Like the wife at home, the Nurse whether in the hospital or in the community is the helpmate of the Medical Man who is considered the leader in the health team. Her education, her preparation for the job she is expected to do, and her status are important factors to consider not only for progress in Nursing itself, but also for success in all health work. One is sure, however, if one is to judge rightly by what has gone before and by the trend of times, the Nursing in this Country is on the march to a pinnacle of success of which any nation can be proud.

Nursing Education

MRS. U. GUPTA

Nursing Adviser, Govt. of West Bengal

Introduction:

The act of Nursing is as old perhaps as human society itself, but the idea of Nursing as a profession is barely of 100 years of age. It was not until 1.860 when Florence Nightingale founded the first School of Nursing in St. Thomas Hospital in England that modern Nursing was born. From then on the story of Nursing is one of progress and human achievement. From a mere collection of uncoordinated manual skills aimed at alleviating physical suffering only, Nursing has become a highly developed profession based on Arts and Sciences and combinding the curative, preventive and positive aspects of all modern health work. From a task in which only hearts were necessary, modern nursing has graduated into a plane where a high degree of intellectual ability and skills are necessary.

Pattern of Nursing Education:

As Medical Science advances, Nursing becomes more and more complex and the task of educating Nurses one of vital concern. The difficulties are enhanced as financial limitations in training programmes often act as serious handicaps in the progress of Nursing education.

The pattern of Nursing Education in the Country to-day falls in two categories:—1. A University Degree. 2. A Certificate from the State Nursing Council issued after training in a School of Nursing attached to a hospital.

1. The University course is in basic Nursing combining curative, preventive and positive aspects with special emphasis on teaching. It also includes instruction in Principles of Administration. This type of course runs for 4 years and leads to a B.Sc. degree which is given at the present moment by the Universities of Delhi and Madras.

2. All the other training schools for Nurses in the Country numbering about 275 are attached to hospitals in various States. Nursing Education available in these various schools are again of two types:—(1) the Certificate Course in General Nursing and Midwifery which runs for about 3½ years and (2) Certificate in Auxiliary Nursing & Midwifery which is a course of 2 years' duration.

The minimum educational qualification for entrance into the University Schools is I.Sc. (1st Division), while to get admittance into a hospital school, one must at least be a Matriculate. To take Auxiliary Nursing, one must at least have education up to Class VI. The minimum age requirement is 17-18 years.

Post-certificate Education:

Apart from basic educational programmes as outlined above, there are programmes of post-certificate Nursing education given in a few places in India. Two most important institutions which are given courses in Teaching and Administration for Nurses trained from various hospital schools of Nursing are the Delhi College of Nursing and the Christian Medical College Hospital in Vellore. All India Institute of Hygiene & Public Health in Calcutta gives a certificate course in Public Health Nursing. The duration of all these post-basic Nursing education courses is 9-10 months.

Refresher courses:

In addition to the Post-certificate courses, there are also refresher courses given for trained Nurses in various subjects, eg. Paediatrics, Ward Administration etc. with the help of W.H.O. and UNICEF.

Problems of Nursing Education:

Nursing is one of the oldest profession in the world which has suffered most from the apprenticeship type of training. Apart from the

University Schools, all the other schools of Nursing are attached to hospitals where the student is used for service in the hospital.

1. In this pattern of Nursing Education, the educational needs of the student are sacrificed every time for the service needs of the hospital. Consequently, not only is the load heavy on the student herself, but also great limitations are placed on the curriculum and academic contents of the course itself, thus harming the very cause of Nursing Education. Out of 1095 days in the 3 years, 800 days are spent in service by the student.

2. Due to the heavy work-load and perpetual emergency situation in the hospital also, the correlation of theory and practice is on the whole poor in most schools.

3. Adds to this is the problem of equipment inadequacy which helps the student to make shift with her techniques.

4. Moreover, in such an institution an atmosphere of learning is absent, thus failing to develop in the student an educational outlook.

5. The hospitals so far being primarily concerned with curative work have failed also to develop amongst those who come out of their precincts, a preventive outlook which is the cornerstone of all modern Nursing.

Attempts at improvement:

The University type of Nursing Education although preferable, is expensive and, therefore, out of reach of most girls who come into Nursing. It would also be costly for the State if it were to prepare Nurses only in this way. Consequently, we have to keep our hospiptal schools going and going in the best way possible. How to improve Nursing Education has been a burning topic in the hearts of many of our Nursing Educators and after much study and deliberation, new subjects such as Psychology, Physics, Chemistry etc. have been added on to the Certificate course in Nursing, so that its curriculum contents are enriched. In order also to overcome the curative bias of a hospital, positive health teaching of the patient and his family and preventive aspects of disease are also now included in the Certificate courses. The ultimate object of all these reforms is in prpoducing a multi-purpose Nurse who will fit into any section of a modern health programme.

Needs of India:

There are about 17,000 Nurses in India to-day. Out of this number, about 13,000 are probably in active service. According to 2nd Plan, we need in India by 1961, 31,000 Nurses. The significance of this, of course, is that we have to more than double the number than we at present possess. In addition to this number of Bed-side Nurses, we also had ,500 Public Health Nurses or Health Visitors and 80,000 Midwives. Our population is growing and our industries are expanding, thus making an ever-increasing demand on our resources, our sense of enterprise and ability to hangle modern health problems.

Conclusion:

Like the wife at home, the Nurse whether in the hospital or in the community is the helpmate of the Medical Man who is considered the leader in the health team. Her education, her preparation for the job she is expected to do, and her status are important factors to consider not only for progress in Nursing itself, but also for success in all health work. One is sure, however, if one is to judge rightly by what has gone before and by the trend of times, the Nursing in this Country is on the march to a pinnacle of success of which any nation can be proud.

Health Education

Health Education is a comparatively new concept in India and whatever has been achieved so far in this field has been built up on the genius of the individuals involved. There has been a tendency erroneously to identify health education with health propaganda and publicity. Health education as a liscipline is of very recent origin. Until about three years ago, students for the Diploma in Public Health at the All India Institute of Hygiene and Public Health had about three hours in their curriculum devoted to health prpopaganda and publicity. The newer concepts of public health envisage something more than mere health propaganda; in addition to providing various services the objectives of a good public health programme are to make the people understand their health problems; to help them realise their responsibilities to themselves and to society in solving the problems; and to motivate people to action for betterment of their health. With a view to developing this outlook in the future public health workers in India, a well rounded courses in health education should be organised for the various categories of students and public health workers in the country. Such courses have recently been proposed to be set up at the All India Institute of Hygiene & Public Health, Calcutta. These courses will provide a substantial number of hours devoted to health education and will be supplemented by practical work in the field.

The progress in training future public health personnel in health education in India appears to be on the right track. What is important is the preparation of professional health educators. The immediate need in the country in term of personnel is about a hundred and twenty trained health educators. One of these would be in each of the health and education departments and in the Community Development Administration in the 29 states in the Union; one health educator would be necessary for the teacher training institutions in each state. Ultimately, in view of the basic philosophy that health education means working with people, it would be fair to assume that there would be a health educator attached to every primary health centre and to every school system. The paucity of personnel and the limited training facilities available in the country make it necessary that two types of personnel receive trining in health education; one, the health education specialist, and two, staff members of public health and education departments such as physicians, health visitors, sanitary inspectors, teachers, etc. Such training should be considered in two phases a long term training and a short term training.

Lond term training :

The objective of the long term training would be to train a corps of persons who would provide leadership in health education in the different departments in the states. They would be responsible for co-ordinating the health education activities in the districts and for establishing and maintaining workshops to procure and produce audio-visual aid material. They would also be respopnsible for the in-service training of the existing health personnel within the state.

In this programme a ten months course at the Institute is envisaged, leading to a diploma to be granted by the University of Calcutta. Candidates for this course would have to be nominated by the states so as to enable the states to build a good health education organization. This arrangement for admission would also ensure employment of the trainees on completion of the course. Candidates would be drawn from persons having a degree in medicine, in the natural or social sciences, or in education. The training would comprpise eight months at the Institute, one month at the Rural Health Centre at Singur, two weeks at the Chetal Urban Health Centre and the remaining two weeks in official and voluntary health agencies. The subjects would include:—Human Anatomy and Physiology, Elements of Microbiology, Communicable Diseases and their control, Sanitation of the environment, Nutrition, Maternal and Child Health, Physiological Hygiene, Occupaptional Health,

Statistics, Public Health Administration, Mental Health, Educational Psychology and Social Psychology, Sociology and cultural anthropology, Health Education.

Short term programme :

For the success of health education it is necessary that there be understanding and co-operation of all personnel employed in public health and education departments. Therefore, in addition to training professional health educators, it would be necessary for public health and education personnel to understand the philosophy of health education and its methods. For this purpose a short course of three months has been established at the Institute. The first course started in June 11, 1956. The candidates are nominees of State Governments and a School. There are twenty students in the first course and two such courses are to be given a year.

The three months training comprpises lecture discussion in public health and health education and supervised field works for a period of three weeks.

[Courtesy—Dr. Morey R. Fields]

Population and Health Statistics

How many we are

DR. S. C. SEAL and P. M. ROY, *Calcutta*

The census of 1951 which is the first census of Free India is the most important one as this is the first time in the world when the completeness of enumeration was verified by a well-planned random sample survey giving a precise estimate of the extent of error involved in the census count. A sample survey of this kind had also been adopted by U.S.A. after 1950 census. The extent of error leads the Registrar General of India to the conclusion that "the number of persons omitted (per thousand counted) could not have exceeded 12 or falen short of 10 .... This, however, is subject to the assumption that the verification is correct, complete and altogether free from bias."

Table I gives abstract information regarding the population of India as obtained in 1951 census. The figures in Table I reveal certain salient features of the Indian population. The state of Kutch which has 58.0% of its population absorbed in non-agricultural fields has the maximum number, viz., 1079 of females per 1,000 males, whereas Delhi whose 91.1% of population (highest in the Indian mainland) follow non-agricultural occupations has the minimum number of females, viz., 768 per 1,000 males. Himachal Pradesh has the lowest percentage (7.0%) of non-agricultural population. The five states which have smaller numbers of females per 1,000 males, viz., 768, 830,844, 859, 863, are Delhi, Coorg, Pepsu, West Bengal, and Punjab, respectively, whereas the five states which have higher number of females per 1,000 males, viz., 1079, 1036, 1022, 1008, 1006, are respectively Kutch, Manipur, Orissa, Travancore-Cochin and Madras. The last-mentioned five states are the only states in India where females out-number males. It is interesting to note that in South India, females and males are almost equal in number, females per 1,000 males being 999, Andaman and Nicobar Islands have still lesser number of females (625 females per 1,000 males) than any of the states in the mainland of India. It is important to note that the Punjab and the Andaman and Nicobar Islands are the only two regions in the whole of Indian Republic where populations are decreasing, the mean decennial growth rates being—0.5 and—0.8 respectively.

The figures in Table II show the composition of the Indian people by religions. As the system for classifying the population by religion was different in 1941 census, 1931 figures are given here for comparison. In the words of the Registrar General, India, "there is no material change in the religious pattern, except that larger numbers of members of tribal groups have returned themselves as professing the Hindu or Christian religion as the case may be. This represents the broad picture for all states, other than those directly affected by partition."

TABLE I

Zone & State	Density per sq. mile	Land area in sq. miles	POPULATION (1951) Males	Females	Persons	Percentage of persons having non-agricultural livelihood (1951)	1941 Persons	Females per 1,000 males) (1951)	Mean Decennial Growth Rate[2] (1941-51)
INDIA		**1,269,640**	**183,305,654**	**173,523,831**	**356,829,485**	**30.2**	**314,766,380**	**947**	**+12.5**
I—North India		**113,409**	**33,098,866**	**30,116,816**	**63,215,742**	**25.8**	**56,531,848**	**910**	**+11.2**
1. Uttar Pradesh ...	557	113,409	33,098,866	30,116,876	63,215,742	25.8	56,531,848	910	+11.2
II—East India Œ	**344**	**261,657**	**46,315,658**	**43,764,639**	**90,080,297**	**24.4**	**80,873,038**	**945**	**+10.8**
1. Bihar	372	70,330	20,223,675	20,002,272	40,225,947	14.0	36,528,119	989	+ 9.6
2. Orissa	244	60,136	7,242,892	7,403,054	14,645,946	20.7	13,767,988	1,022	+ 6.2
3. West Bengal ...	807	30,775	13,345,441	11,464,867	24,810,308	42.8	21,837,295	859	+12.7
4. Assam	106	85,012	4,812,166	4,231,541	9,043,707	26.7	7,593,037	879	+17.4
5. Manipur ...	87	8,628	283,685	293,950	577,635	16.5	512,069	1,036	+12.0
6. Tripura	158	4,032	335,589	303,440	639,029	24.7	513,010	904	+21.9
7. Sikkim	50	2,744	72,210	65,515	137,725	8.4	121.520	907	+12.5
III—South India	**450**	**168,099**	**37,822,542**	**37,778,262**	**75,600,804**	**35.7**	**64,837,350**	**999**	**+15.3**
1. Madras	446	127,790	28,419,003	28,596,999	57,016,002	35.1	49,830,749	1,006	+13.4
2. Mysore	308	29,489	4,657,409	4,417,563	9,074,972	30.1	7,337,818	949	+21.2
3. Travancore-Cochin ...	1,015	9,144	4,620,803	4,659,622	9,280,425	45.2	7,500,057	1,008	+21.2
4. Coorg	145	1,586	125,327	104,078	229,405	42.3	168,726	830	+30.5
IV—West India Œ	**272**	**149,609**	**20,982,281**	**19,678,834**	**40,661,115**	**40.3**	**33,249,726**	**938**	**+20.1**
1. Bombay	323	111,434	18,614,862	17,341,288	35,956,150	38.5	29,181,146	932	+20.8
2. Saurashtra ...	193	21,451	2,094,442	2,042,917	4,137,359	53.4	3,560,700	975	+15.0
3. Kutch	34	16,724	272,977	294,629	567,606	58.0	507,880	1,079	+11.1
V—Central India	**181**	**279,399**	**26,497,524**	**25,770,435**	**52,267,959**	**26.8**	**47,273,886**	**973**	**+10.0**
1. Madhya Pradesh ...	168	130,272	10,662,812	10,584,721	21,247,523	24.0	19,631,615	993	+ 7.9
2. Madhya Pradesh ...	171	46,478	4,133,075	3,821,079	7,954,154	27.8	7,169,880	925	+10.4
3. Hyderabad ...	227	82,168	9,431,062	9,224,046	18,655,108	31.8	16,327,119	978	+13.3
4. Bhopal	122	6,878	437,635	398,839	836,474	34.4	778,623	911	+ 7.2
5. Vidhya Pradesh ...	151	23,603	1,832,940	1,741,750	3,574,690	12.9	3,366,649	950	+ 6.0
VI—North-West India	**123**	**284,342**	**18,569,728**	**16,402,869**	**34,972,597**	**34.1**	**31,966,764**	**883**	**+ 9.0**
1. Rajasthan ...	117	130,207	7,961,673	7,329,124	15,290,797	29.1	13,306,232	921	+13.9
2. Punjab	338	37,378	6,786,934	5,854,271	12,641,206	35.5	12,698,603	863	— 0.5
3. Patiala & East Punjab States Union ...	347	10,078	1,894,844	1,598,841	3,493,685	27.4	3,402,586	844	+ 2.6
4. Jammu and Kashmir[1]	...	92,780	...			...	...	...	...
5. Ajmer	287	2,417	360,236	333,136	693,372	54.6	583,693	925	+17.2
6. Delhi	3,017	578	986,538	757,534	1,744,072	90.1	917,939	768	+62.1
7. Bilaspur	278	453	64,738	61,361	126,099	9.3	110,336	948	+13.3
8. Himachal Pradesh ...	94	10,451	514,765	468,602	983,367	7.0	947,375	910	+ 3.7
Andaman and Nicobar Islands	**10**	**3,215**	**19,055**	**11,916**	**30,971**	**85.8**	**33,768**	**625**	**—8.6**

1Figures for the State of Jammu and Kashmir and Part B Tribal Areas of Assam not included.
2The "mean decennial growth indicates the e rate at which population has grown between two censuses.

TABLE II

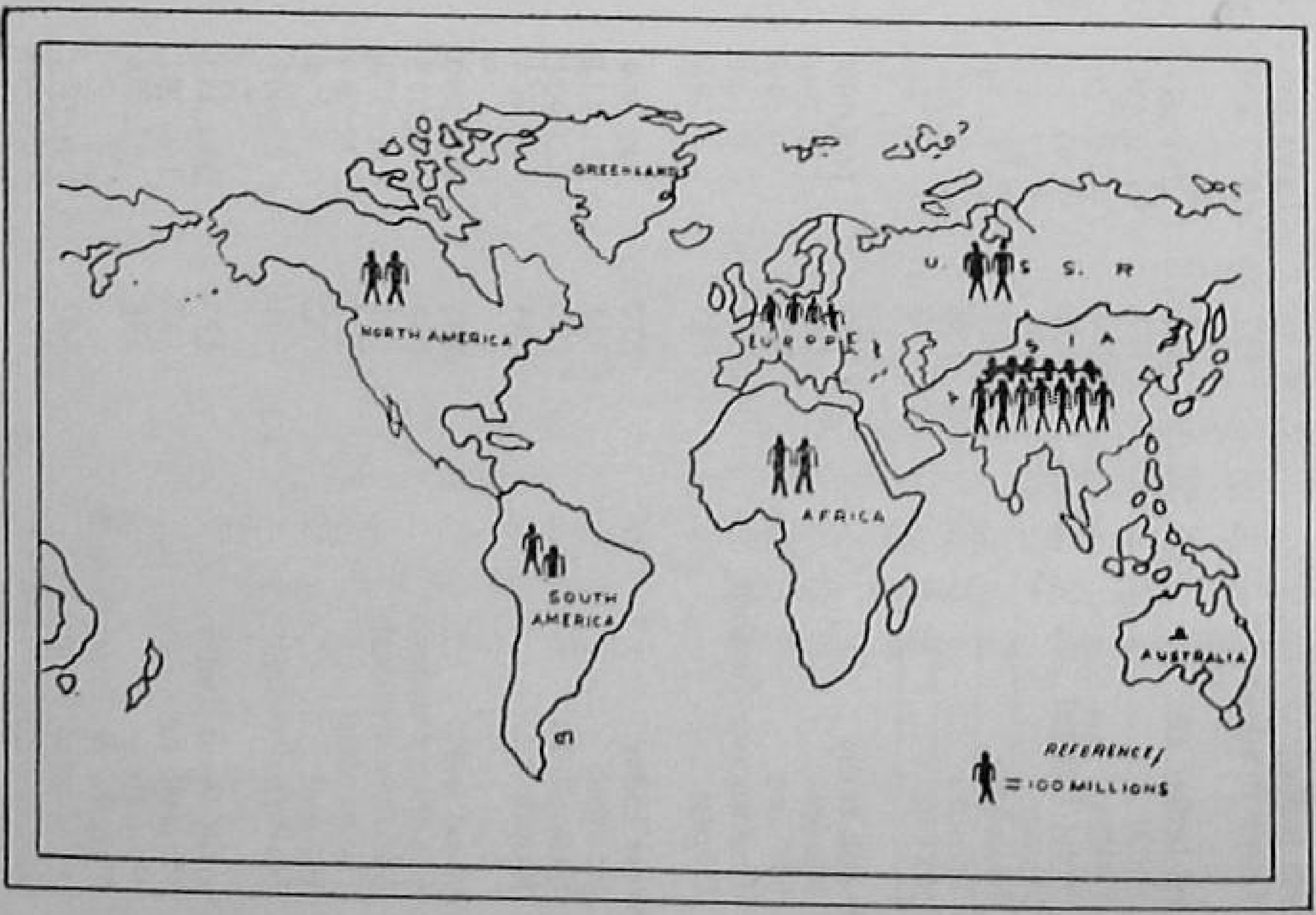
	As per Census of 1951 Number in Lakhs		As per Census of 1951 Percentage of persons professing different religions		As per Census of 1931 Number in lakhs11	As per Census of 1931 Percentage of persons professing different religions11
	A1	B11	A1	B11		
Hindu	3,032	2,697	84.99	86.99	2,036	84,36
Sikh	62	25	1.74	0.77	11	0.46
Jain	16	16	0.45	0.52	12	0.50
Buddhist	2	1	0.06	0.03	1	0.04
Zoroastrian	1	1	0.03	0.03	1	0.04
Christian	82	73	2.30	2.35	51	2.11
Muslim	354	282	9.93	9.09	238	9.86
Jew	...	...	...	...	...	...
Other Religion Returns (Tribal) ...	17	10	0.47	0.32	64	2.65
Other Religion Returns (Non-Tribal) ...	1	...	0.03	...	...	...
All Religion	3,567	3,104	100.00	100.00	2,414	100.00

1 These figures relate to the present territorial limits of India, but are exclusive of the people living in Jammu and Kashmir State and part of Part B Tribal Areas of Assam, where the 1951 Census was not taken ; and they are exclusive also of 268602 persons in the Punjab, whose enumeration record was destroyed by fire before the information about religion could be tabulated.

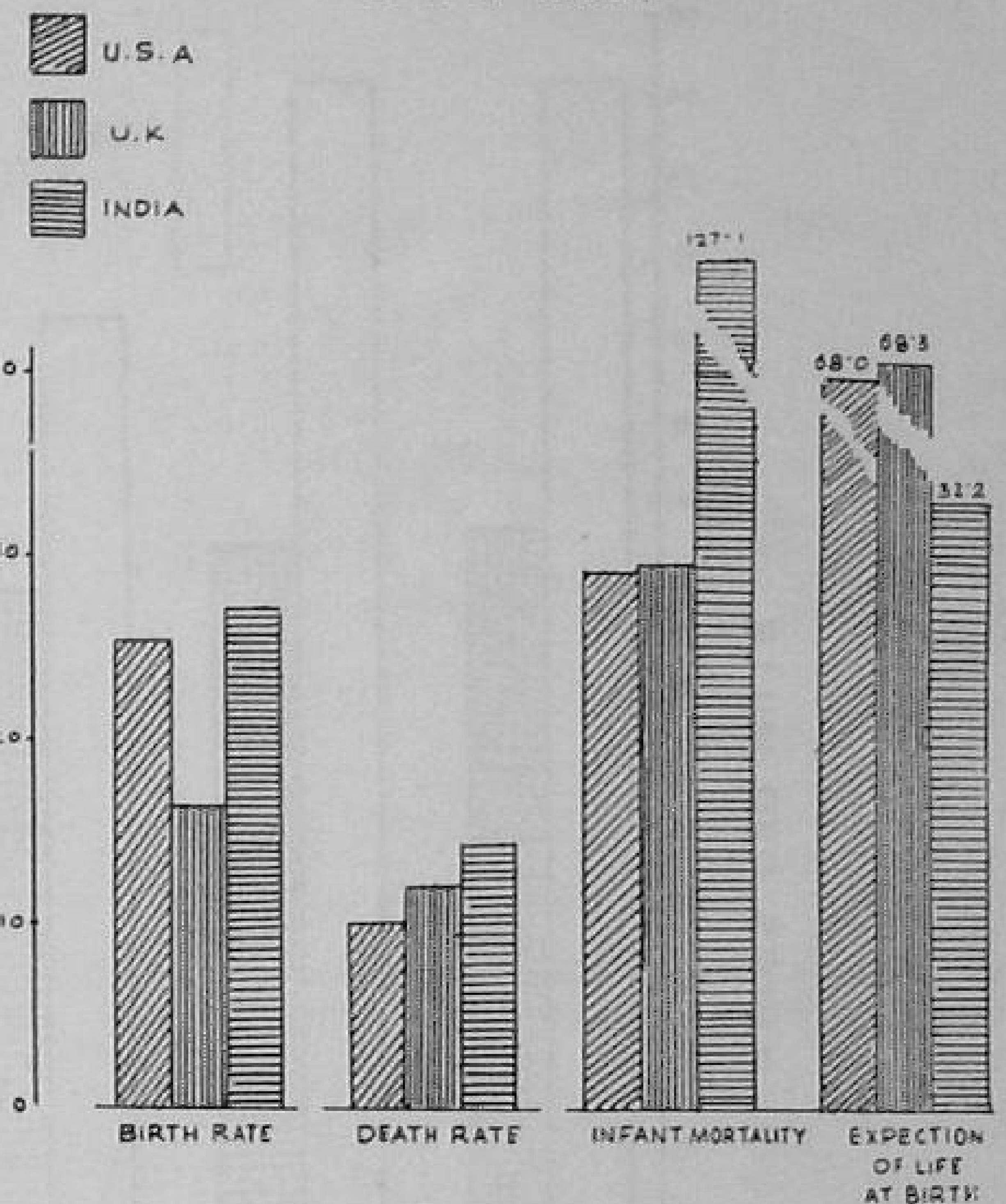
11 These figures relate to the territory of India, where 1951 Census was undertaken with the exception of the three states of Assam, West Bengal and Punjab, the figures for which are not considered accurate.

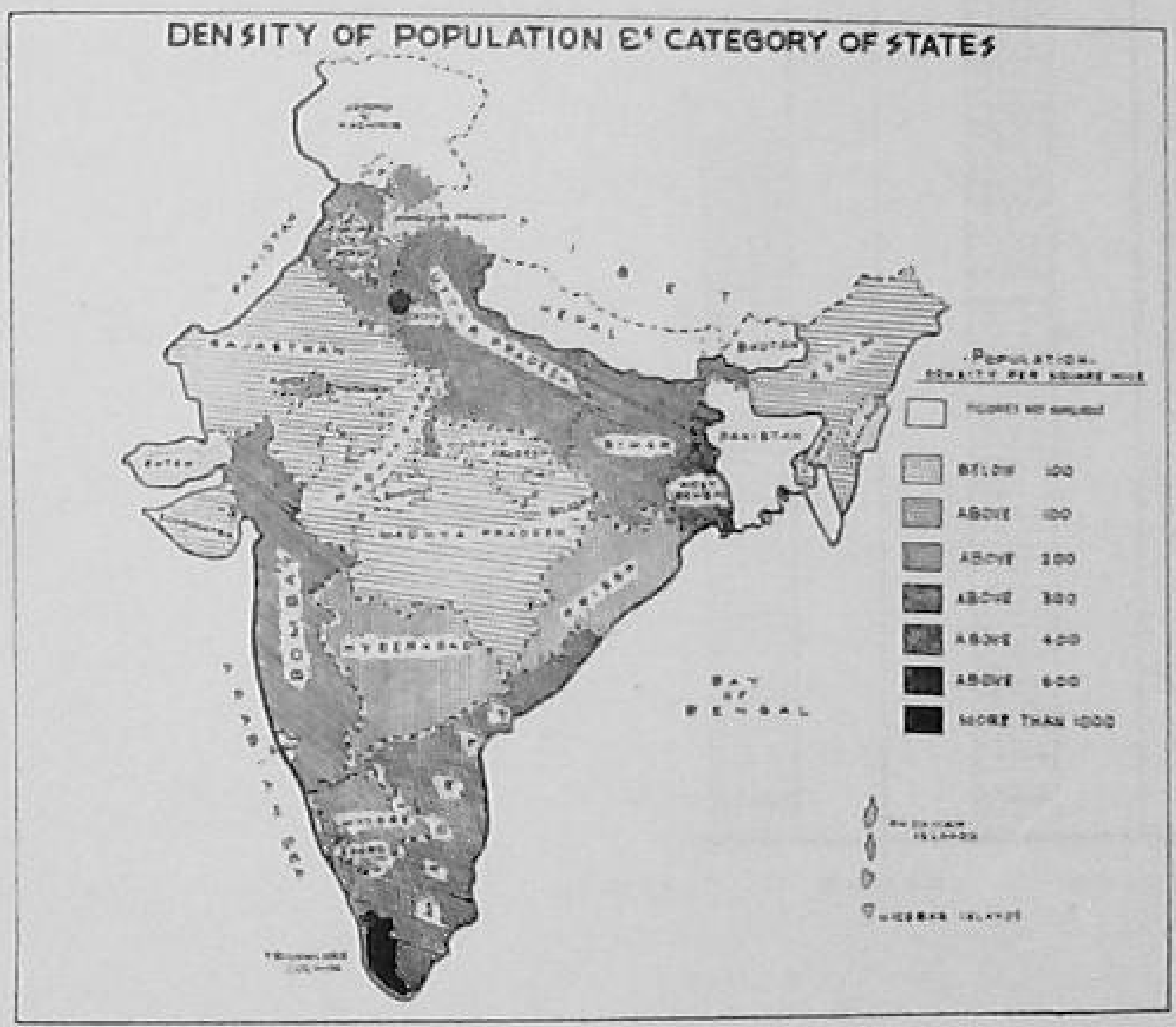
Some important vital statistics and population characteristics are presented here in maps, graphs and charts with a view to give the readers quickly a comparative idea how densely we live, how we are distributed, how much we earn and spend, what are our birth, death and infant mortality rates, what are the principal causes of deaths and what is our expectation of life and the like:

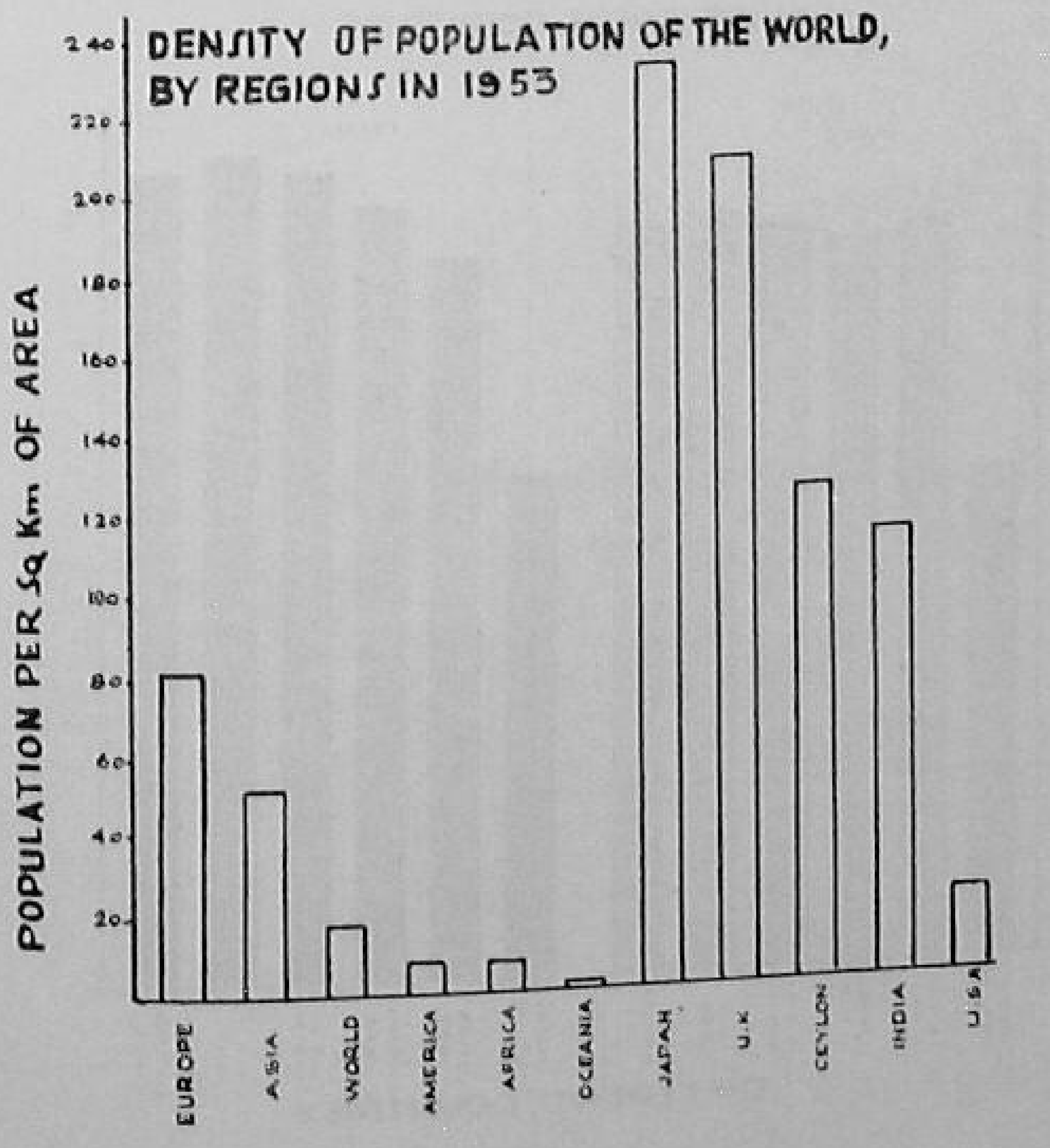
Regional Distribution of World Population.



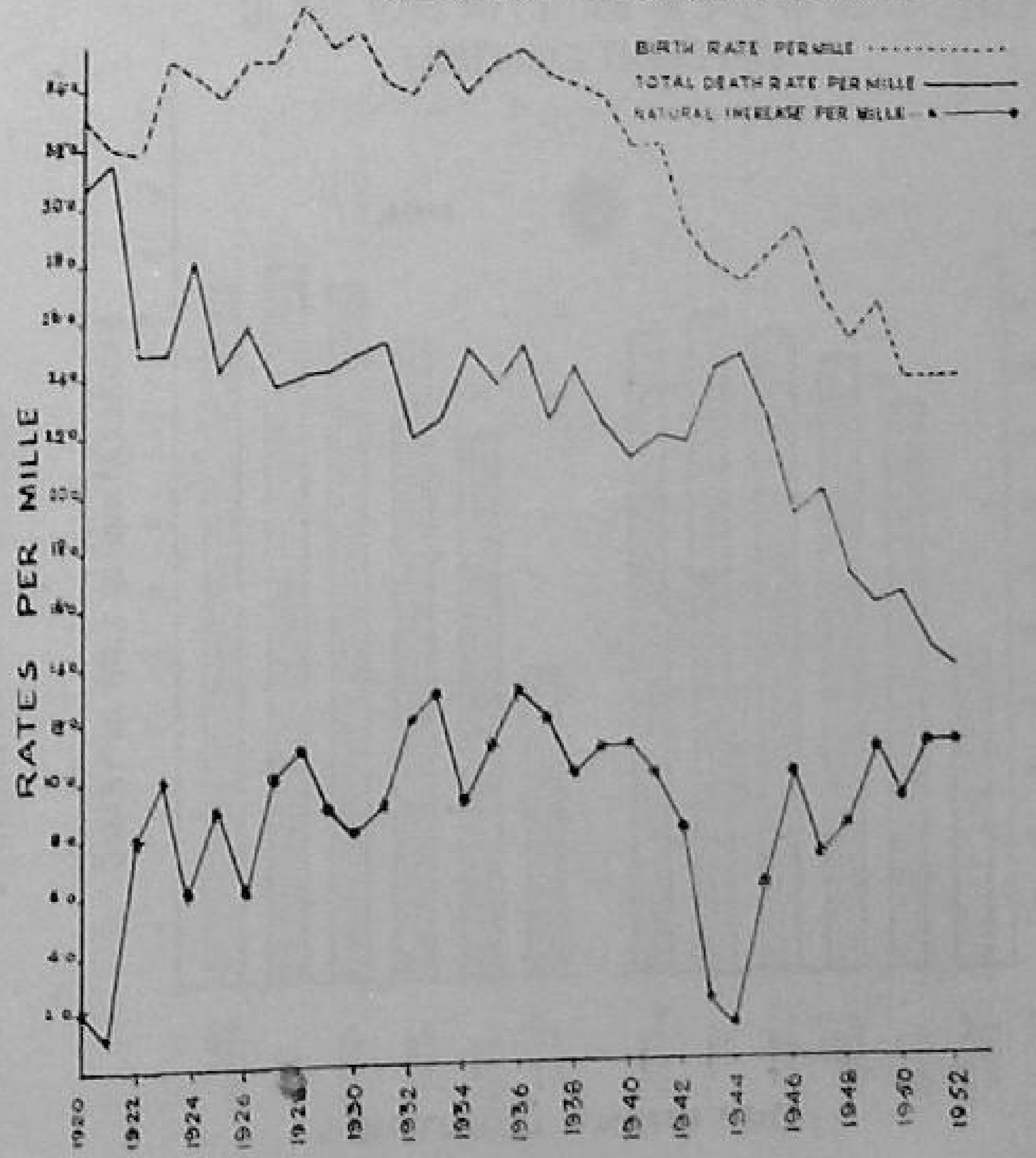
VITAL STATISTICS-U.S.A & U.K AS COMPARED WITH THOSE OF INDIA



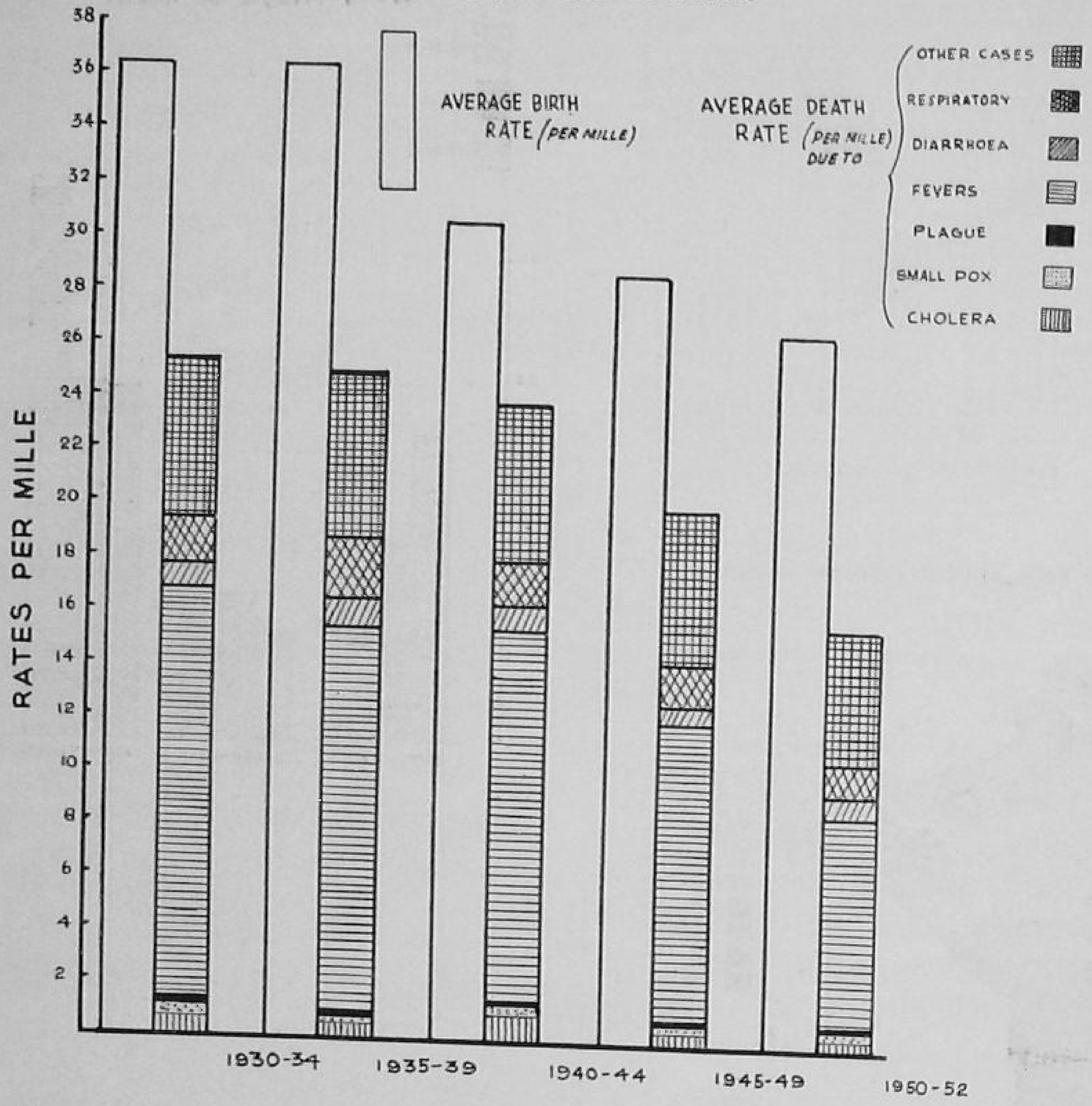




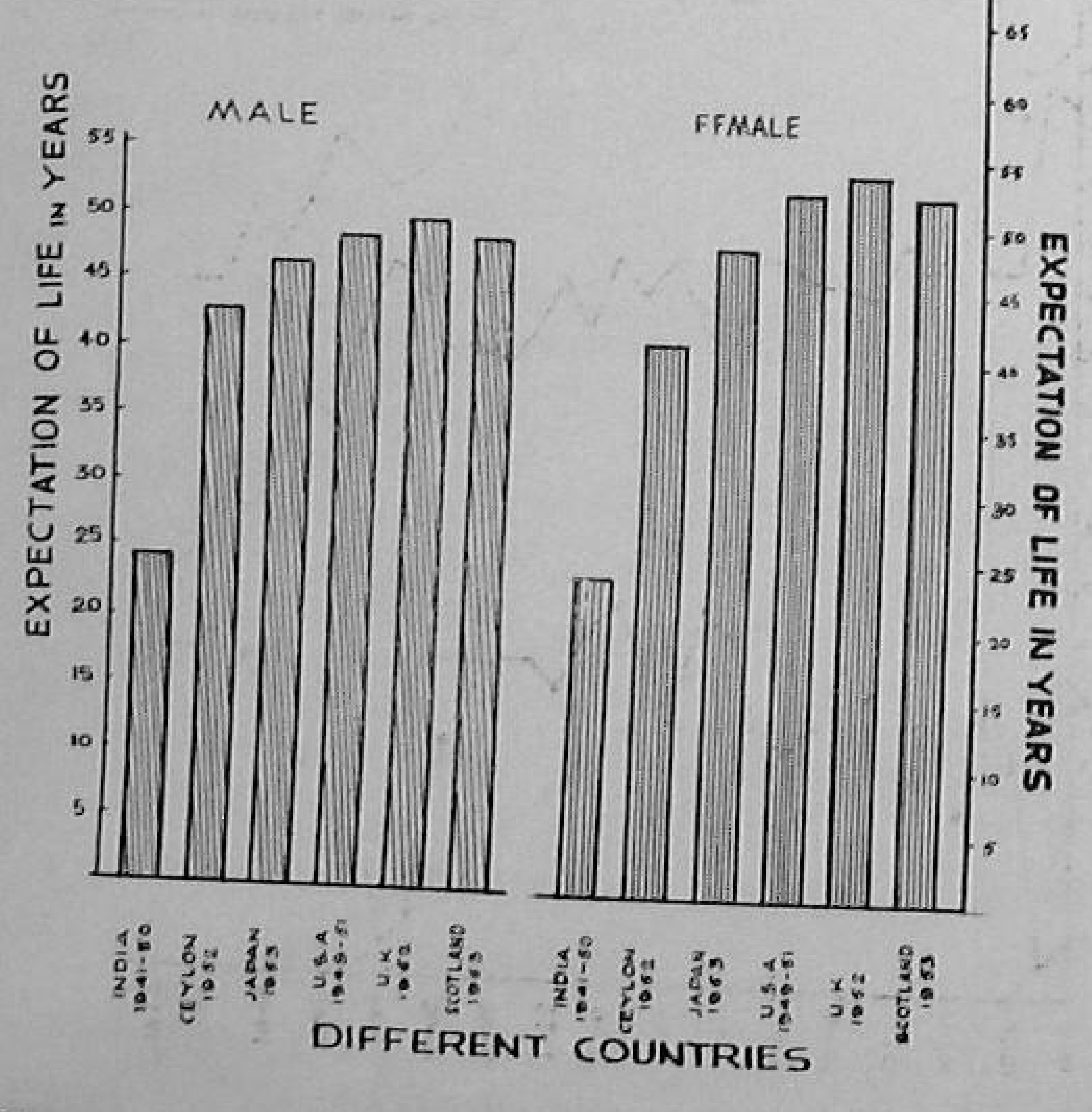
TREND OF BIRTH RATES, TOTAL DEATH RATES AND NATURAL INCREASE PER MILLE IN INDIA 1920–52



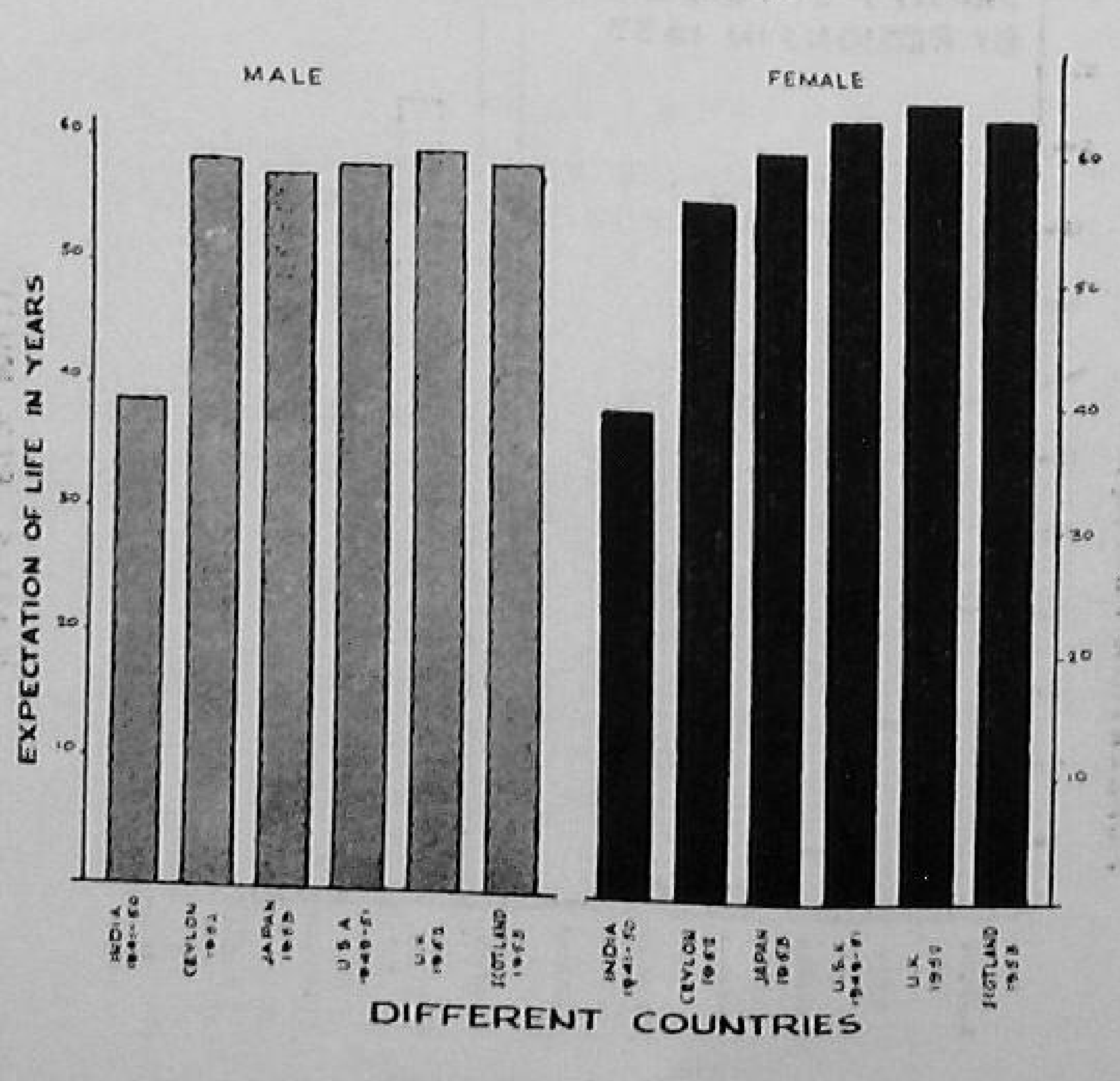
AVERAGE BIRTH RATES AND DEATH RATES PER MILLE IN INDIA FOR SOME PERIODS OF YEARS



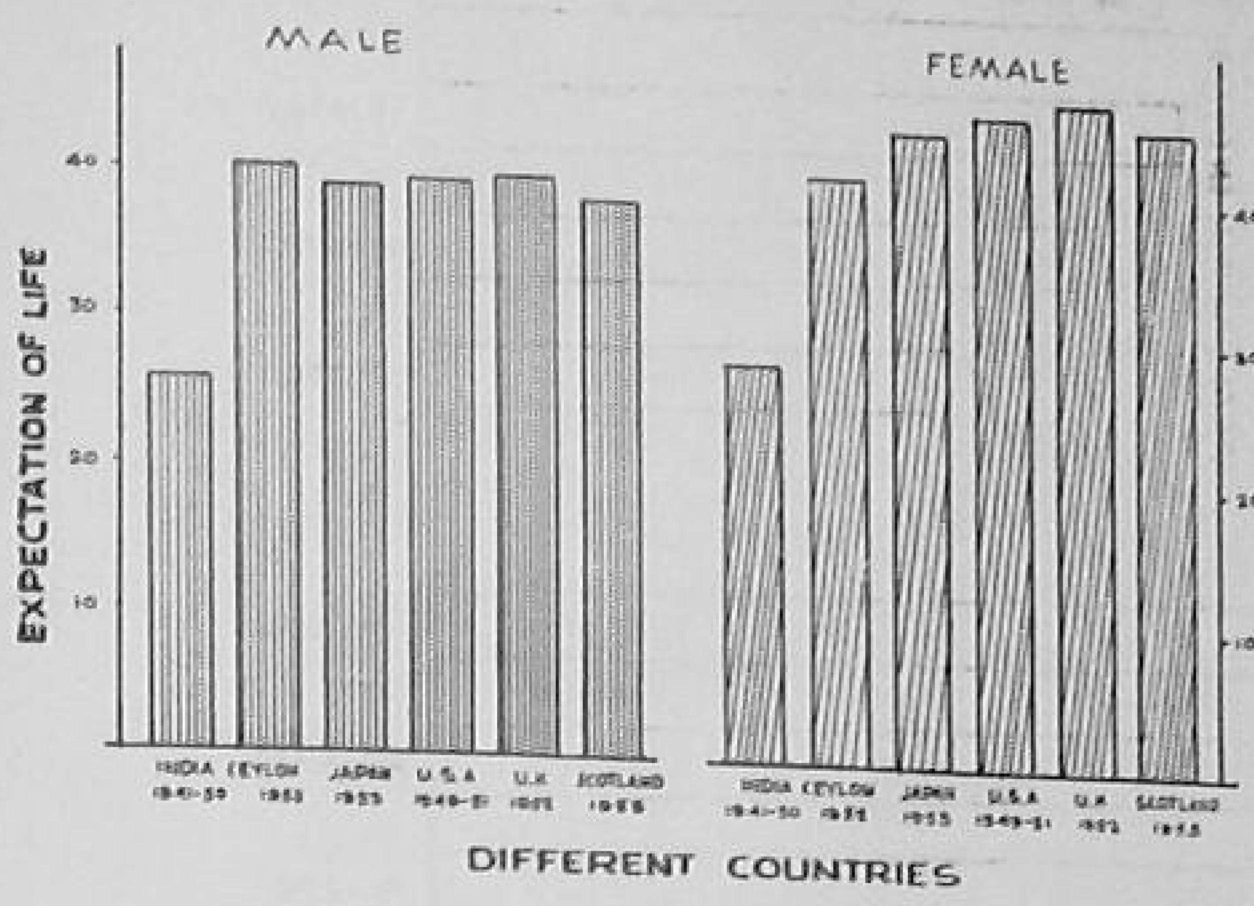
EXPECTATION OF LIFE AT BIRTH FOR EACH SEX IN DIFFERENT COUNTRIES



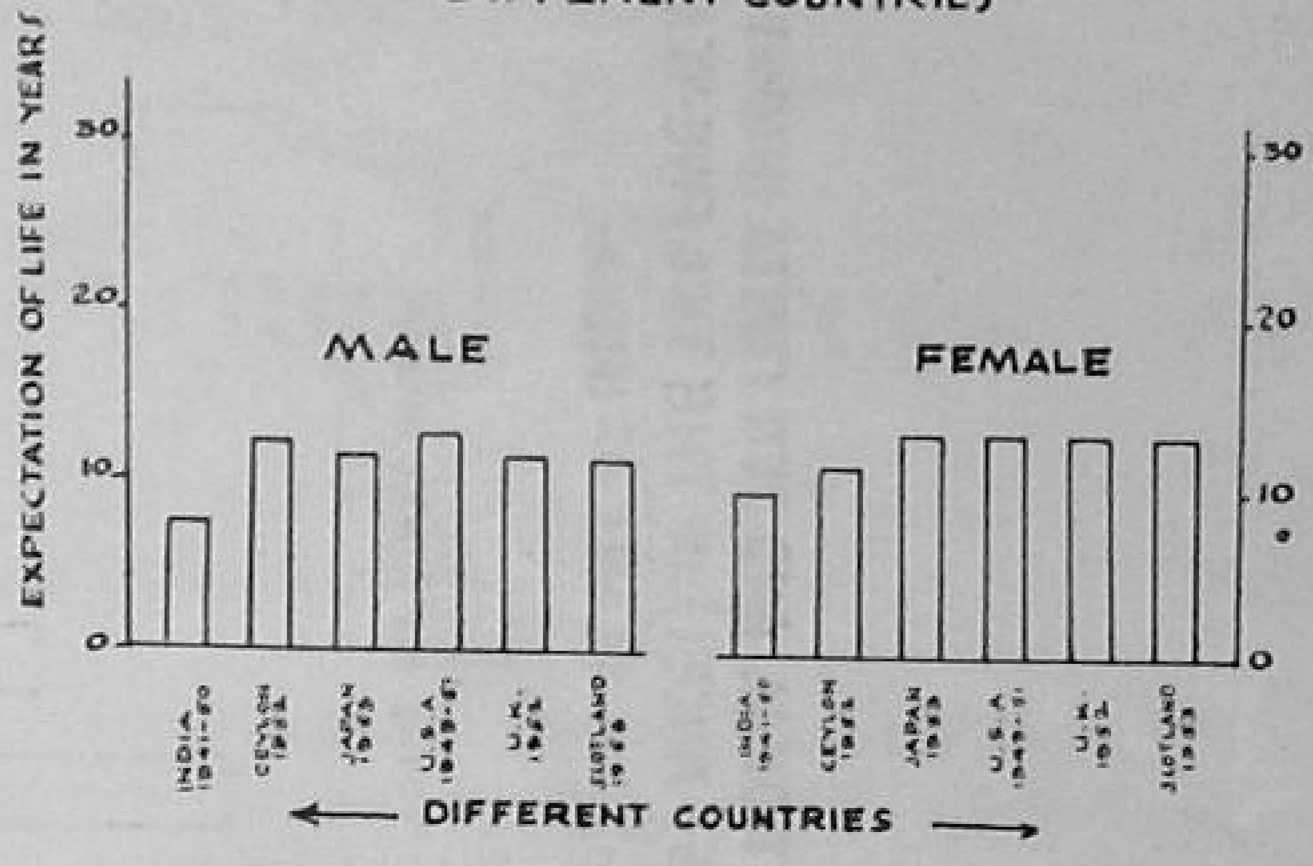
EXPECTATION OF LIFE AT 10 YEARS' AGE FOR EACH SEX IN DIFFERENT COUNTRIES

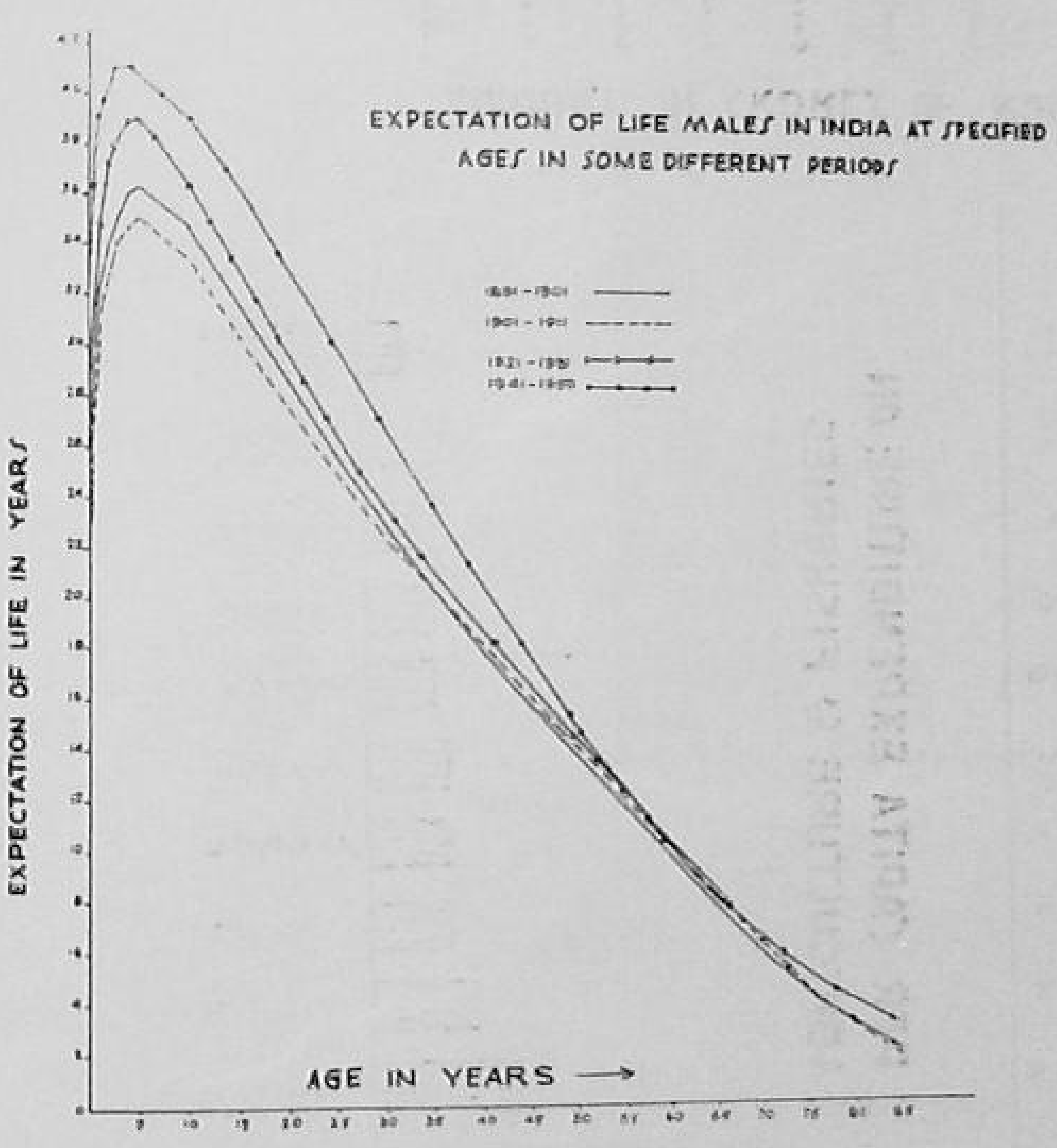


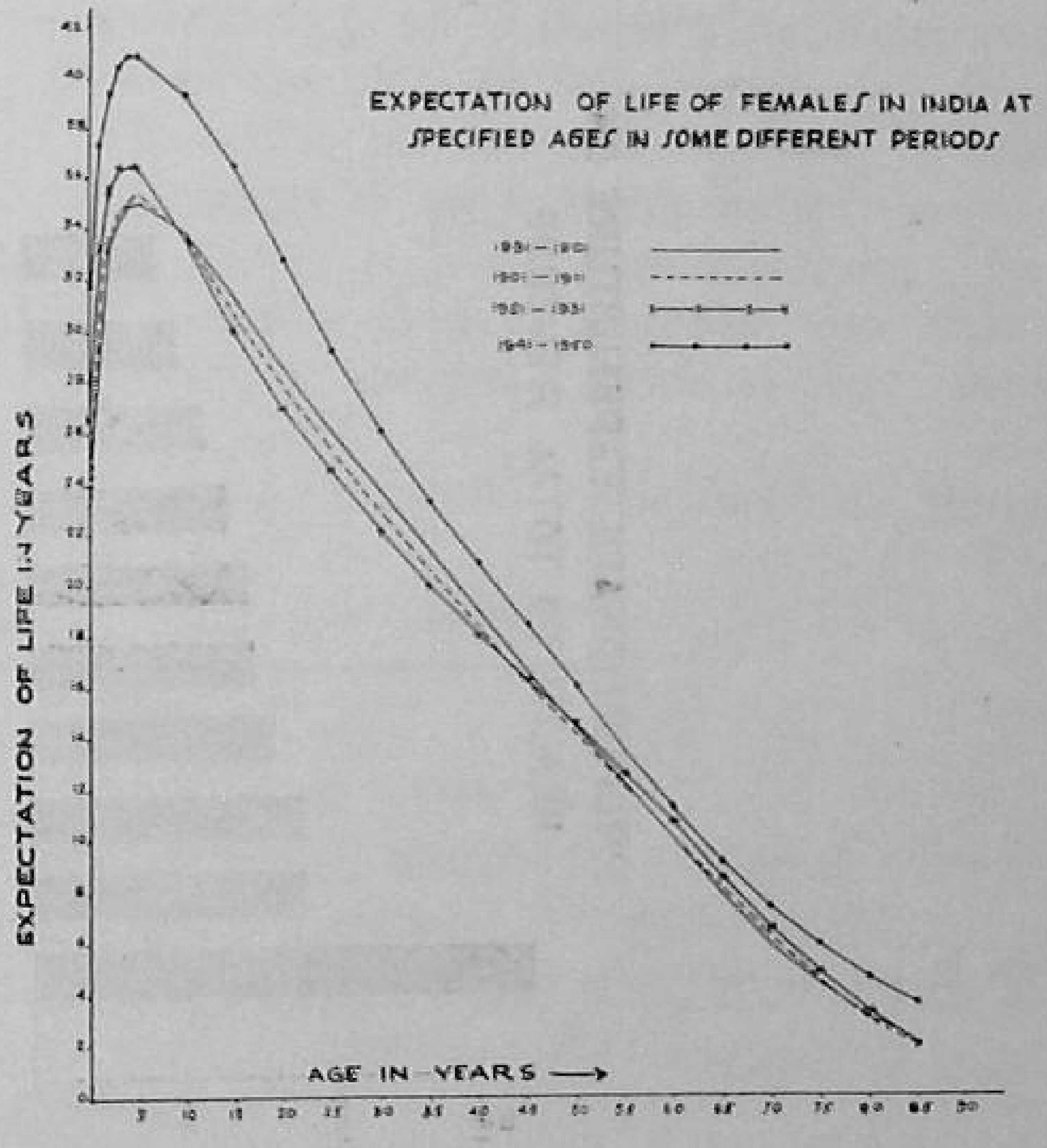
EXPECTATION OF LIFE AT 45 YEARS' AGE FOR EACH SEX IN DIFFERENT COUNTRIES



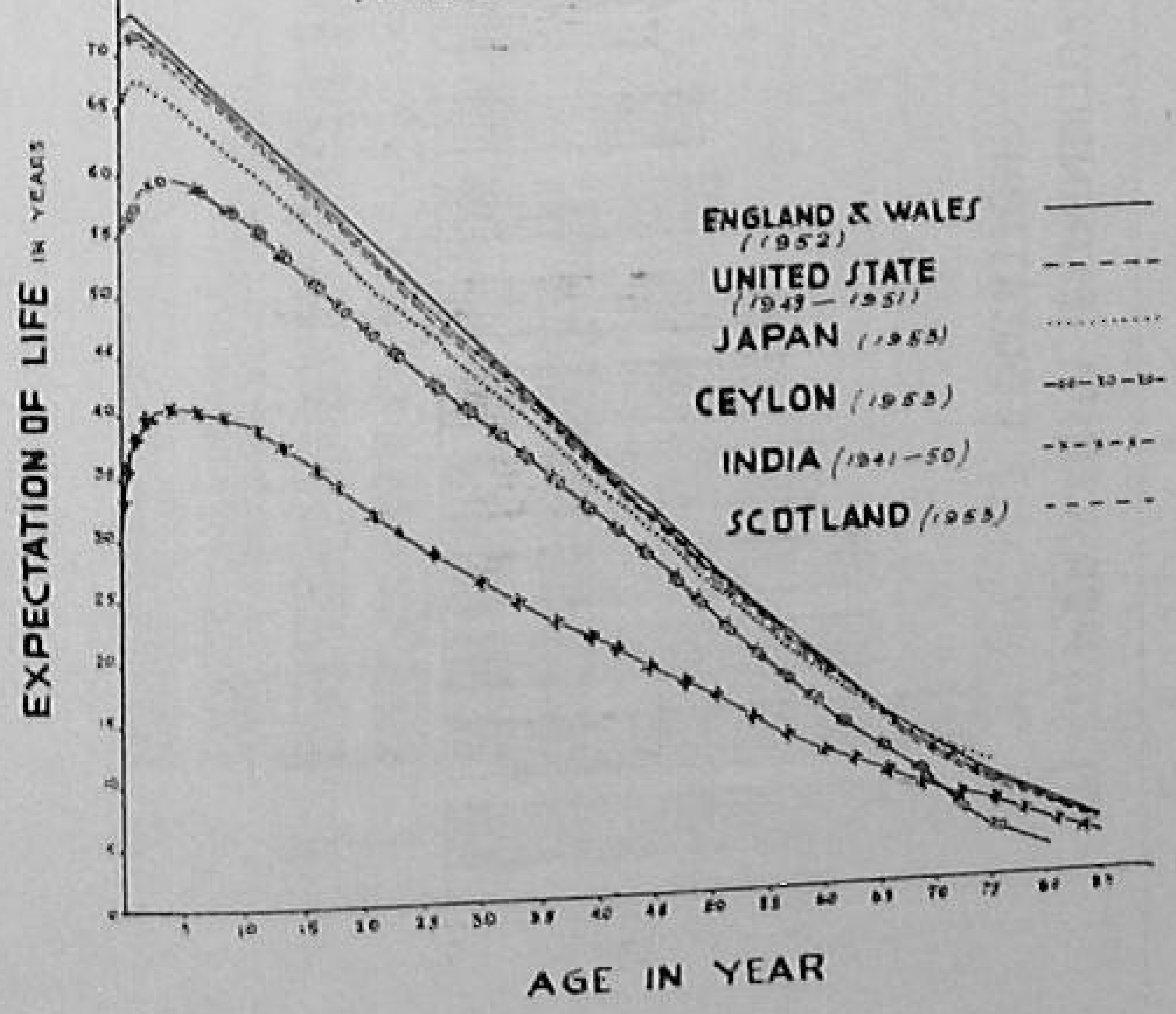
EXPECTATION OF LIFE AT 65 YEARS' AGE IN DIFFERENT COUNTRIES

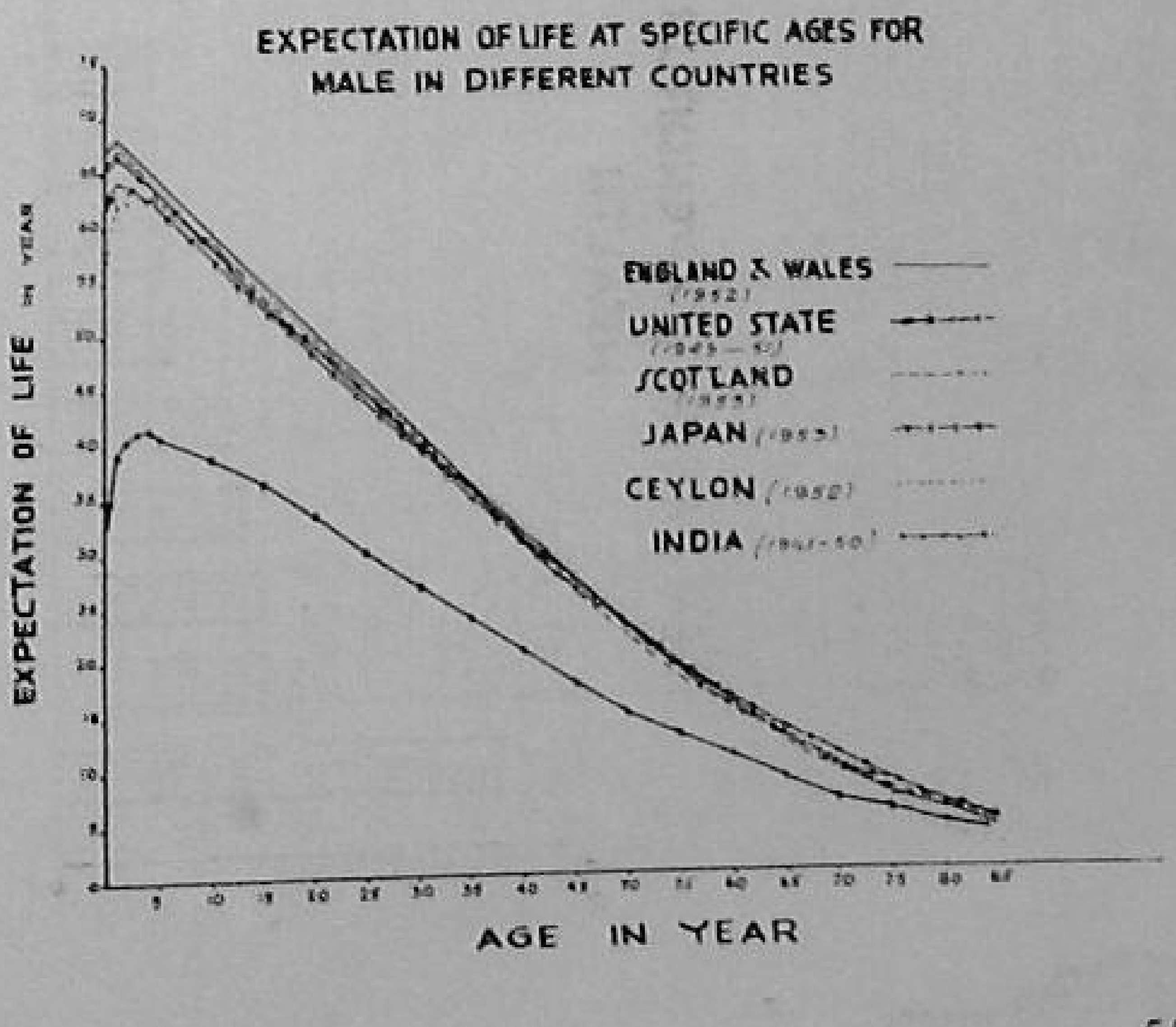


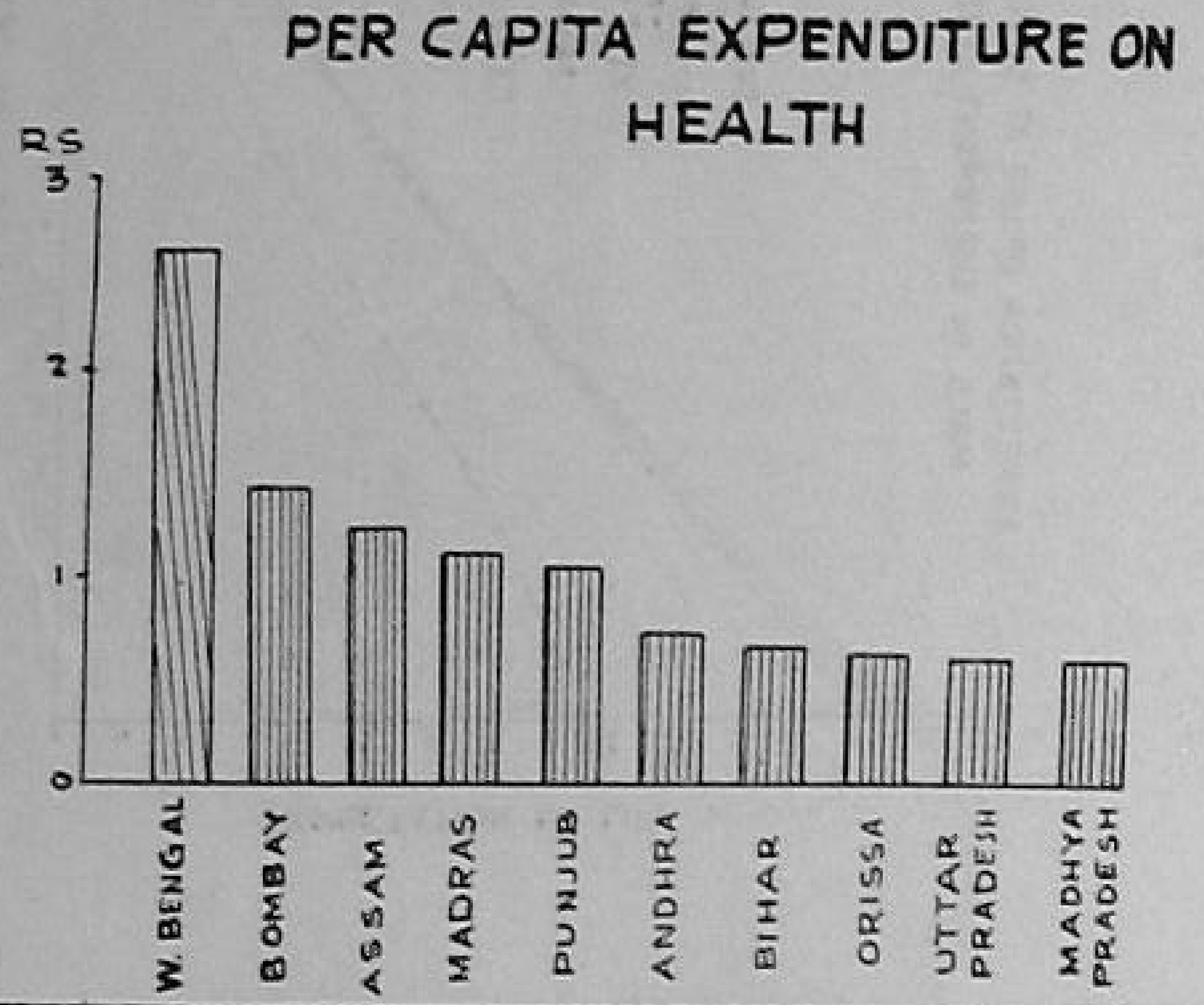


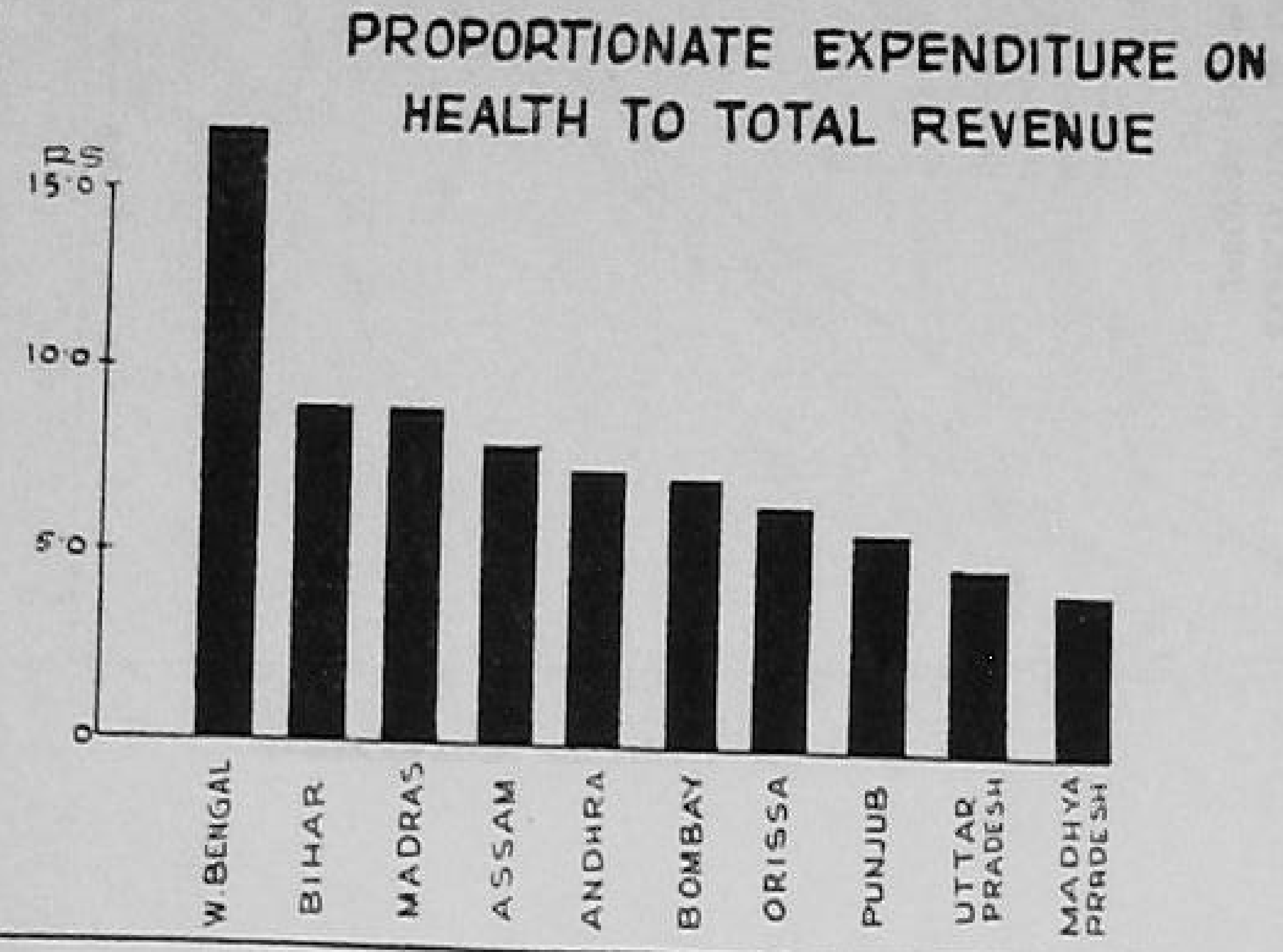


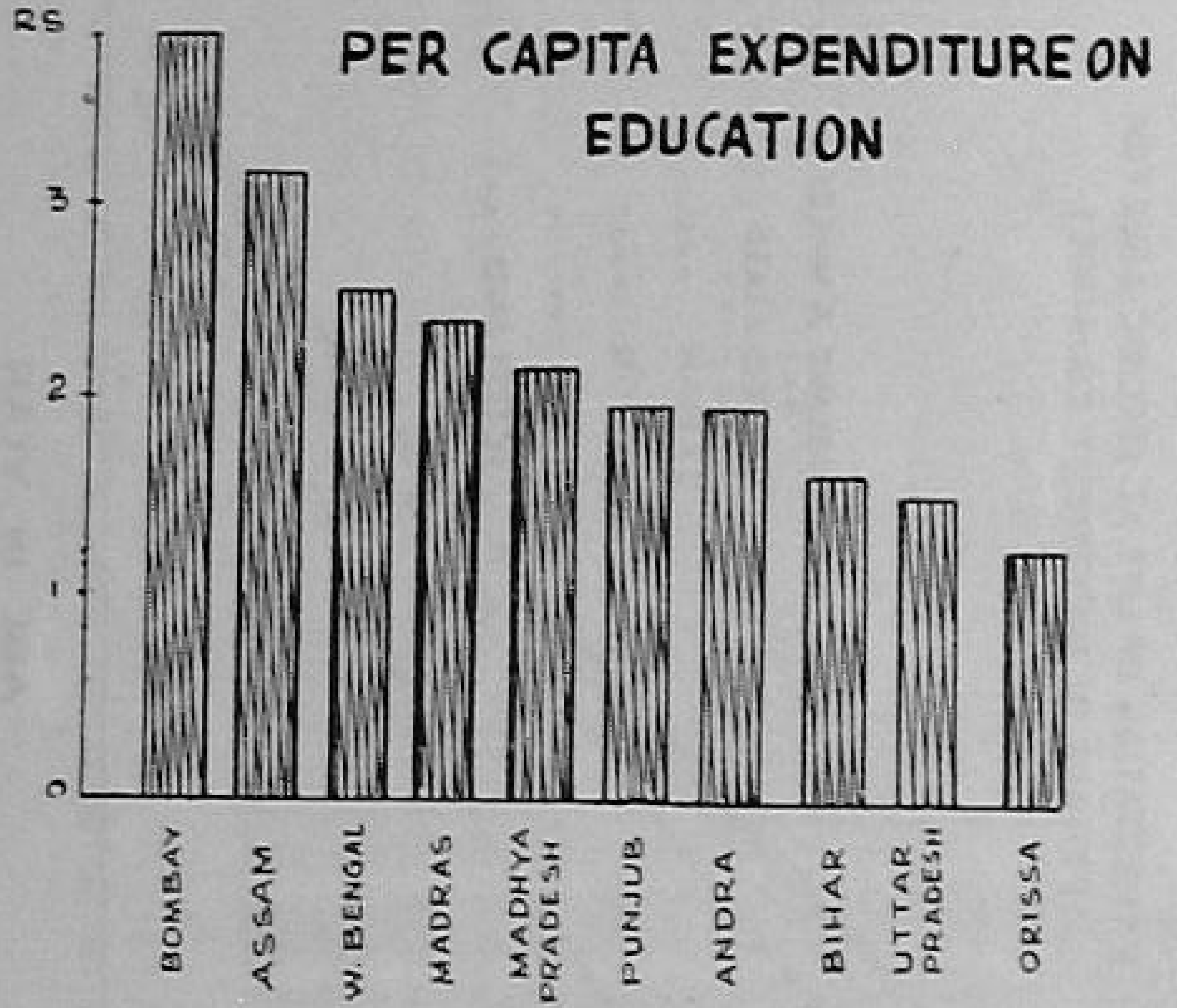
EXPECTATION OF LIFE AT SPECIFIC AGES FOR FEMALE IN DIFFERENT COUNTRIES

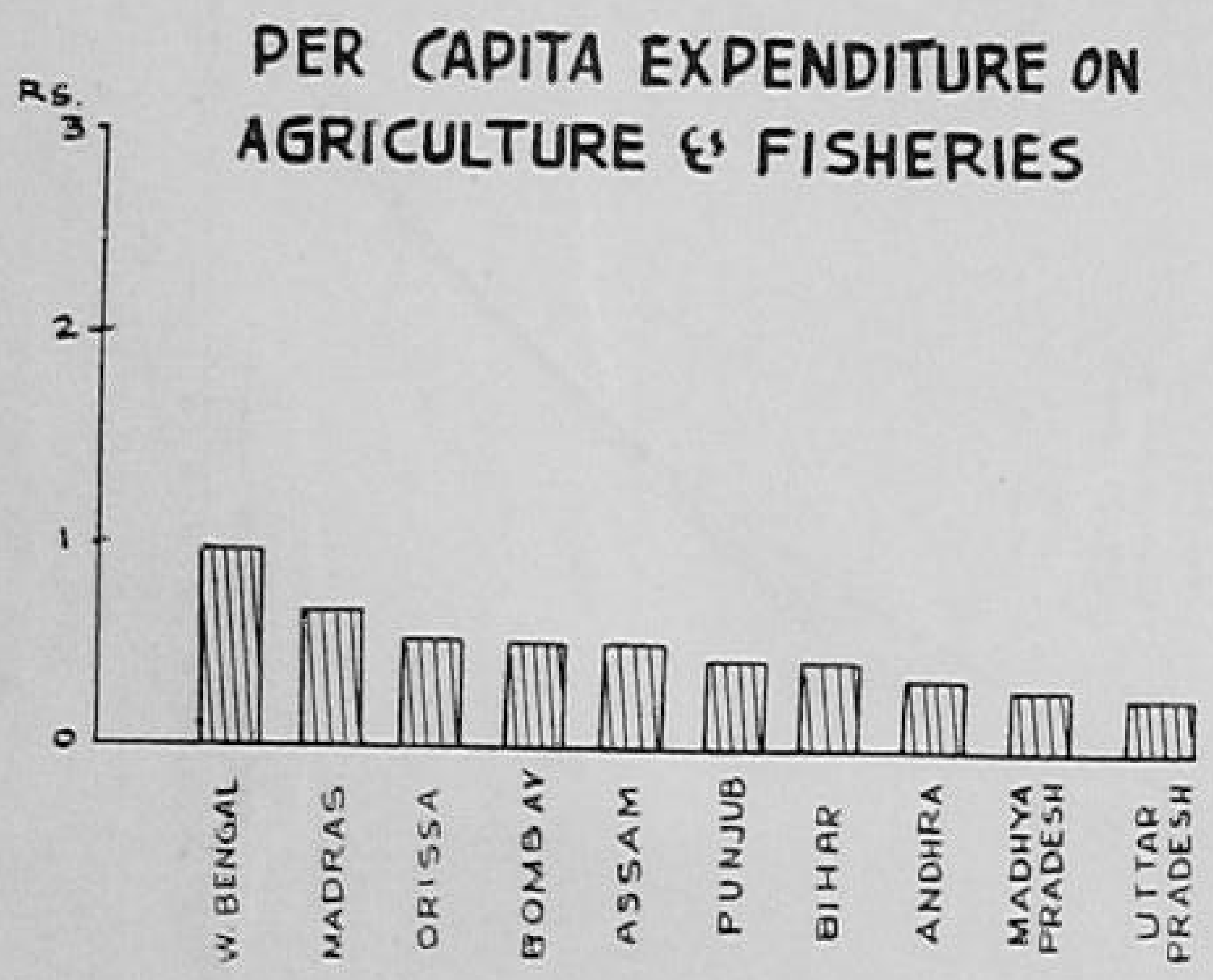


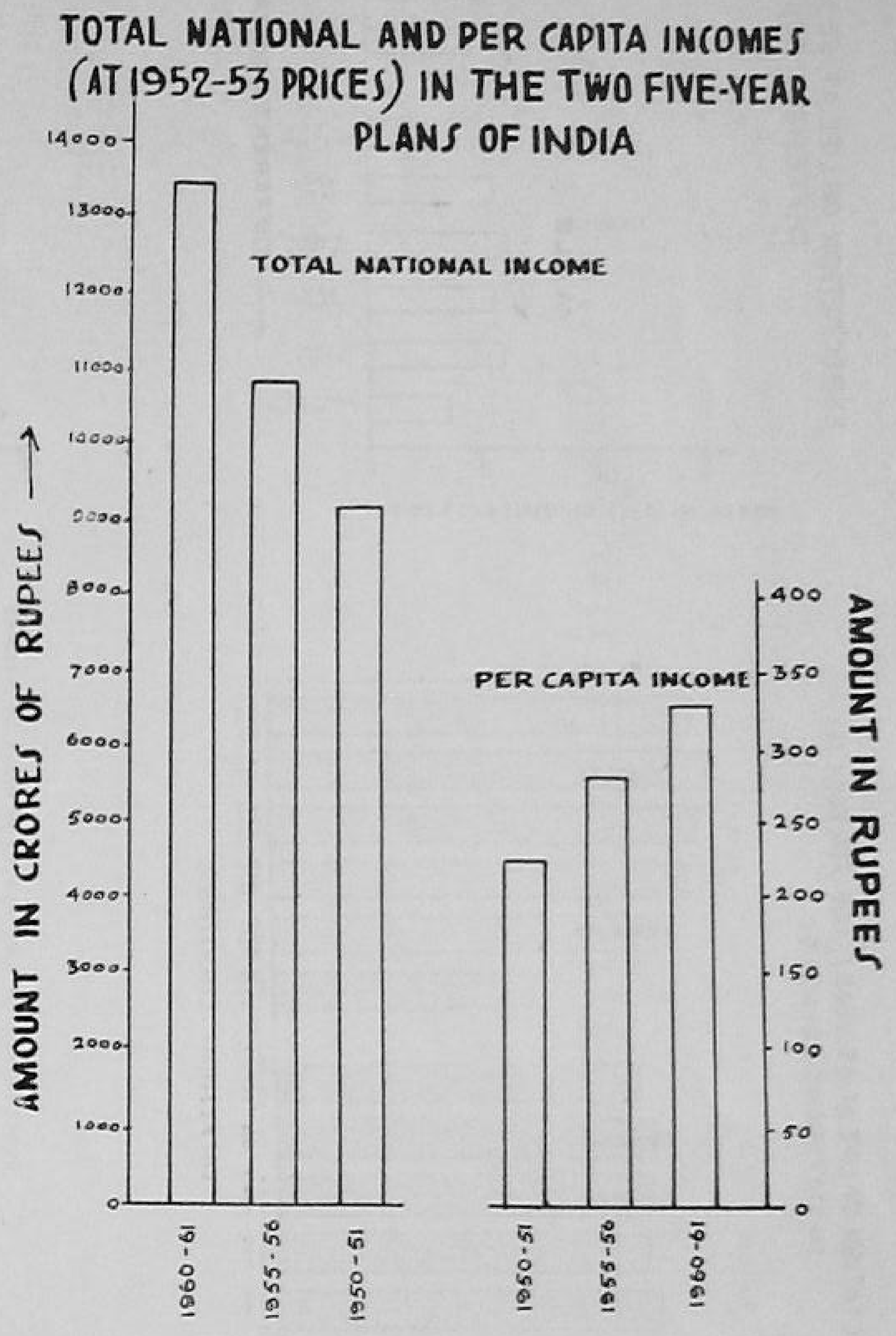



PER CAPITA EXPENDITURE ON HEALTH
RS
3
2
1
0
W. BENGAL
BOMBAY
ASSAM
MADRAS
PUNJUB
ANDHRA
BIHAR
ORISSA
UTTAR PRADESH
MADHYA PRADESH


PROPORTIONATE EXPENDITURE ON HEALTH TO TOTAL REVENUE
RS
15·0
10·0
5·0
0
W. BENGAL
BIHAR
MADRAS
ASSAM
ANDHRA
BOMBAY
ORISSA
PUNJUB
UTTAR PRADESH
MADHYA PRADESH


PER CAPITA EXPENDITURE ON EDUCATION
RS
3
2
1
0
BOMBAY
ASSAM
W. BENGAL
MADRAS
MADHYA PRADESH
PUNJUB
ANDRA
BIHAR
UTTAR PRADESH
ORISSA


PER CAPITA EXPENDITURE ON AGRICULTURE & FISHERIES
RS.
3
2
1
0
W. BENGAL
MADRAS
ORISSA
BOMBAY
ASSAM
PUNJUB
BIHAR
ANDHRA
MADHYA PRADESH
UTTAR PRADESH


TOTAL NATIONAL AND PER CAPITA INCOMES (AT 1952-53 PRICES) IN THE TWO FIVE-YEAR PLANS OF INDIA
TOTAL NATIONAL INCOME
AMOUNT IN CRORES OF RUPEES →
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1960-61
1955-56
1950-51
PER CAPITA INCOME
AMOUNT IN RUPEES
400
350
300
250
200
150
100
50
0
1950-51
1955-56
1960-61

Health of the Armed Forces

By Colonel N. D. P. Karani
(Armed Forces Medical Services)

The fighting potential of a modern army, irrespective of the introduction of scientific warfare, weapons and equipment finally resolves itself into the state of physical and mental fitness of the participants—basically the average officer and soldier. Even in recent times, during various phases of World Wars, casualties due to diseases far exceeded battle casualties, thus seriously depleting the striking power of a force. With this in view, Armed Forces Medical Services have been constantly striving to reduce the morbidity rates, in peace and war under varying conditions by attempts to overcome or counteract those factors which are responsible for sick wastage and stress those factors which will ensure positive sound health. The degree of success achieved, can be amply demonstrated by the reduction in the incidence rates of those preventible diseases which have constituted the major portion of the sick wastage.

The table below gives the annual incidence rates per 1,000 for army personnel during the period 1949-1955:—

TABLE: INCIDENCE RATES PER 1000

	1949	1950	1951	1952	1953	1954	1955
All causes	407.7	345.8	323.1	303.5	263.0	245.5	244.0
Malaria	29.7	23.3	12.4	11.2	8.2	4.8	3.8
Dysentery	7.8	5.8	5.8	4.6	4.1	3.5	3.3
Infective Hepatitis	10.3	4.9	3.7	3.6	3.2	3.0	5.4
Venereal Diseases	24.1	14.0	10.7	7.8	6.1	4.4	3.6
Respiratory Diseases	70.4	68.8	58.7	58.2	46.9	41.9	40.9
Skin Diseases	40.3	37.0	34.1	28.1	22.3	20.8	14.1

The gradual and progressive decline in incidence rates during this period furnish adequate testimony to the value and efficacy of the simple principles of Public Health as implemented among members of the military community. There has been a decrease in the rates for "all causes" and the rates for all the other separate causes mentioned with the exception of Infective Hepatitis. In the case of Infective Hepatitis, the rates show a continuous fall up to 1954, but there is a rise in 1955 due to the epidemic which broke out in Delhi towards the close of that year. The rate for 1956 for all causes is 60% of the rate for 1949; corresponding percentages are 13% for Malaria, 43% for Dysentery, 52% for Infective Hepatitis, 15% for V.D., 58% for Respiratory Diseases and 35% for Skin diseases.

The fall in the incidence rates can be attributed mainly to the following factors:—

(*a*) Making personnel hygiene-conscious, thus enabling them to appreciate their responsibility towards personnal and social hygiene.

(*b*) Increased attention to environmental hygiene such as:—

(i) Accommodation
(ii) Disposal of waste
(iii) Clothing
(iv) Water supply.

(*c*) Improved nutrition as a result of balanced ration scales for the three services.

(*d*) Use of insecticides and repellants. Systematic DDT spraying and other anti-malaria and anti-fly measures.

(*e*) Vigorous anti-VD measure including attention to rest and recreation of troops.

The attention that the Army has focussed on the preventive aspect of medicine has paid rich dividends. It is, however, realised that constant vigilence is necessary and the drive for further improvement continues.

India's Future Population

By C. CHANDRASEKARAN, Calcutta

Today, India ranks second to China among the countries of the world in total population. Its population, according to the 1951 census was about 357 million. What will be its population in future? This is not a mere academic question. On its answer will depend the targets to be aimed at in the Five Year Plans of economic and social development. The number of persons to be fed and clothed, the number of houses to be built, the social amenities and the medical and public health facilities to be provided, and the number of children to be educated and of men to be employed, have all to be based on the total strength of the population.

Inspite of its importance for economic and social planning, it is not possible to do anything more than to provide rough estimates of the future size of the population. While the task is difficult even in countries which possess satisfactory vital statistics, it is much more so in countries such as India where birth and death statistics are extremely unreliable. Much reliance has then to be placed on the data obtained during the size as revealed by the censuses often hold important clues to future population dynamics. Such clues have to be studied in conjunction with other fragmentary data on vital statistics in order to work out a suitable framework for making population projections.

Where population changes are affected little by international migration as in India, population growth is essentially due to the difference between births and deaths. It is, therefore, relatively easy to explain the patterns of population growth in India in the past. In the three decades between 1891-1921, the total growth was less than 5 per cent, as the population which was 326 million in 1891 increased only to 248 million by 1921. In two of those three decades there was no apparent growth. The absence of growth during 1891-1901 can be attributed to the severe famines which occurred during that decade. The failure of growth during 1911-1921 resulted from the great influenza pandemic of 1918-1919. In contrast to the three decades prior to 1921, the three decades subsequent to it have seen a population increase of about 44 per cent or a little over 1 per cent per annum.

There is overwhelming evidence that a large part of the recent spurt in population growth is due to the absence of large-scale famines and epidemics. As a result, the death rates since different censuses. Past changes in population 1921 are far below the levels which prevailed prior to it. It is estimated that the present level of the death rate is about 30 per 1000 population. If with this death rate the population growth stands at the rate of 1 per cent per annum, the level of the birth rate works out to about 40 per 1000 population.

The future rate of population growth will be determined by the levels which the birth and death rates will assume. As already indicated, the death rate has been declining in the recent past and the chances are that they will decline still further in the near future. The one reason for confidently expecting such a decline is that the present death rate is extremely high as judged by the levels prevailing in the economically developed countries of the world. This feature as well as the fact that the Five Year Plans embody large-scale prpogrammes directed to improve the health and dietary of the population give assurance that a rapid decline in the death rate can be expected in the next few years.

What is the trend of the birth rate, which is the other factor connected with population growth? In a paper entitled "Fertility trends in India" that I presented to the World Population Conference held in Rome in 1954, I discussed this question at some length taking into account the results of a number of fields studies con-

ducted in India, including the United Nations—Government of India Population Survey in the Mysore State. I expressed the view that in the last few decades it was not likely that the fertility of the Indian population had declined and that it might conceivably have even increased. This view was somewhat at variance with the conclusion suggested by the estimates of birth and death rates in India during 1941-1950 as given by the Census Actuary. His estimate indicated a definite reduction in the birth rate during 1941-1950 as compared with those of previous decades. The question has recently been considered by Mr. Ansley J. Coale of the Office of Population Research, Princeton University who states that "fertility levels in India have not been subject to major declines in recent years". Some studies by the Indian Statistical Institute lend support to the view that fertility might have increased slightly.

As a number of social and cultural influences, some of which tend to increase fertility while others tend to diminish it, are at work, any assumption regarding future levels of fertility is highly conjectural. To that extent, population projections worked out on the basis of such assumptions are also not beyond question. The Princeton Study referred to above has estimated India's population up to 1986 under the following three assumptions concerning future fertility levels:

(1) that fertility will remain unchanged from 1951 to 1986,

(2) that fertility will begin a linear decline in 1956 and reach half its value by 1981, and remain constant afterwards, and

(3) that the decline in fertility will be postponed uptil 1966, after which a more precipitous decline will occur, the fertility reaching one-half of its current level by 1981.

Each of these assumptions was combined with an estimate of the most likely course of mortality in the future viz. that the expectation of life at birth which was about 32 years in 1951 will rise to 52 years or more by 1986.

The three assumptions regarding fertility trends yielded 775, 589 and 634 million, respectively, as the estimate of India's population in 1986. It is hard to say which of these estimates will prove nearest to what will happen in 1986. But to those who are connected with planning, these estimates give not only an idea of the number to be planned for, but also the difficulties which may be caused by an unrestricted growth in population. Above all, they emphasise the need for developing effective programmes for the planned reduction of fertility. If past experience in India and elsewhere is to serve as a guide, the task of inducing a lower birth rate when the social and cultural setting necessary for it is virtually absent, is stupendous. All the ingenuity which we can command, the technical knowledge which we can use and the methods of mass communication we can adopt have to be marshalled for the spread of family planning methods in the country, if India's future population is to be kept within limits commensurate with high living standards. This is the main point to which attention is drawn by the data of population projections cited above. The extent to which the planning, will determine our accepptance of the estimates can be proved wrong by judicious greatest challenge we have before us.

Family Planning

SHRIMATI DHANAVANTI RAMA RAU,
President, Family Planning Association of India, Bombay

The WHO gave an authoritative definition of health as "a state of complete physical, social and mental well-being and not the mere absence of disease or infirmity". To those of us who are endeavouring to spread the movement for family planning, this definition expresses, in great part, the fundamental underlying the work. For family planning measures can help to promote good health and truly vital living, especially for the mother and child. By ensuring that a suitable interval occurs between the birth of each of their children, the couple can see to it that the mother recovers her full health and strength after the delivery and at the same time that the new child gets its full share of loving care and attention until it reaches a fairly stable stage. It is, of course, for each couple to decide for themselves how long each spaced interval shall be—two years, three years or more, having regard to their own individual health and economic circumstances. By the same token, a family can be limited to a certain number of children as the parents may decide.

In other words, family planning means parenthood by choice, not by chance.

It is, primarily, a preventive aspect of health, for it is based on the essential that conception itself is prevented, unlike the ancient practices of infanticide, exposure of the newly-born and induced abortion. The last practice of induced abortion is, in fact, widely prevalent even today, in almost all countries including our own. Since abortion is practised in a hush-hush manner, and most often conducted through the most fearfully unhygienic means, we in this country are unable to show the figures of its prevalence and the terrible toll it takes by way of mortality and morbidity among women of childbearing age. One fact, however, is clear: the big majority of induced abortions take place among married women with a small minority among the unmarried or widows. The meaning of this is quite clear for those who wish to see: married women who feel they cannot cope with another delivery and another child, either for health or economic reasons, try to cause an abortion on themselves. If these same mothers could be advised about the methods by which conception itself can be avoided, what a saving it would mean in terms of life and strength and family security!

The movement for family planning is being furthered with the help of a variety of workers. It is essentially, a medical measure as the methods by which families can be planned have to be medically sound and can be best advised by medical personnel. But, doctors have not been advising these methods to those of their patients who stand in need of them to any large extent. Thus, the movement has come into being as a socio-economic welfare measure. Social workers, trained and even untrained, have undertaken the tremendous tasks of educating the public on this topic in a sound and healthy manner. Doctors are *now* undertaken to give contraceptive advice and assistance to those of their married patients who need it. Research workers are operating in two fields, laboratory and clinical research, to test and perfect the actual chemical, mechanical and appliance-methods by which conception can be safely, effectively and acceptably controlled. Demographic and sociological research to study population patterns and trends is being undertaken as also studies on the attitudse and motivations of the people towards reproduction and family living in general.

Within the sphere of sociological research, I would like to cite the study known as the India-Harvard-Ludhiana Study where simple family planning methods are being tested out as to efficacy and acceptability. The Study is elaborately planned and fundamentally it is one through which the scientists are learning how to utilise a public health approach in spreading family planning. We who work in this field feel

that ultimately it must become a public health measure, so that the standard of family living can improve, just as it is improving through other widespread preventive health measures.

In addition to the question of health—but not apart from it for both are inextricably bound together—there is the burning question of abolishing the dire poverty that haunts this country. For centuries our people have lived a submerged existence, uncomplainingly for the most part because of their deep religious feelings, but nevertheless in a manner which is a negation of vigorous living. Ever since we attained Independence, the Government and the people have been engaged in a mighty effort to raise the standards of living of the people and here we have to begin dealing in terms of *all* the people, and not of some sections only. To deal with the population as a whole in India is however a gigantic task. No other country except China has the combination that exists in India viz., dire poverty and a rapidly rising population, an ancient civilisation (with old traditions and family-patterns) and an economy which is just beginning to be developed.

The First and Second Five Year Plans have clearly expressed the view that the effort to raise living standards must be supported by measures to lower the birth rate, if ultimate success in developmental measures is to be assured. The position is not difficult to grasp: India's death rate is at present around 17 per thousand or less having gone down over the last thirty years as a result of advancing health services. India's birth rate, however, has barely changed over the last thirty years, and remains at about 40 per thousand. Therefore, every year we witness the phenomenon of a net addition to our already large population of about 80 lakhs of people. What this means in terms of developing our resources almost from scratch to feed, clothe, house, educate and provide health and security in adequate measure to all the people can well be imagined. Therefore, from the national point of view, in order to help in the development of the country, it is essential to control the growth of the population so that it stabilises at a manageable level. The 1951 Census Commissioner pegged this level at 45 crores, to be attained within the next 15 years. While other measures may be of help to stabilise the population such as raising the age of marriage, etc., there is no doubt that family planning is an essential step towards achieving this aim.

The Family Planning Association of India, with its headquarters in Bombay and Branches in other parts of the country, is the national voluntary organisation specialising in this field. Its work mainly consists of conducting free family planning clinics, where advice and assistance are available for birth control, infertility and marriage guidance, training the medical and other personnel who are to undertake family planning work, helping to initiate research schemes, and carrying on educative propaganda.

It works in co-operation with the Government of India Family Planning Committee in the Union Ministry of Health (on which it is represented by its President) and has helped to start family planning centres in several places under the auspices of other welfare organisations, and even by official bodies, in addition to its own centres.

The work in this field is just beginning to get under way. Under the Second Five Year Plan, Government intends to open new family planning clinics in the 2,000 primary health units in the rural areas and 300 centres in urban areas. The co-ordinated efforts of medical men and women, scientists and dedicated social workers will be required in increasing measure to ensure that this part of the Second Five Year Plan (with its important repercussions on the other sections of the Plan) is implemented satisfactorily.

Medical Geography of India

Dr. S. C. Seal, *Calcutta*

Apart from the question of diseases arising in epidemic form in any part of the populated area of the world a large number of diseases occur persistently in certain areas of the world, a country or a State. These are known as endemic zones or areas. India is one such zone in which some diseases associated with temperature climate and with a few exception all those that are associated with the tropics are prevalent in endemic form. Most of them are communicable diseases but differ widely in distribution from place to place. No complete or satisfactory explanation has been offered for this predilection. Although most of these diseases are termed as Tropical diseases, a deeper and closer consideration of the factors involved in their causation largely removes the significance of the tropical climate, many of them being at one time prevalent for centuries in the temperate and the colder regions of the Western World. Even so, the factors involved in their persistence in any region seems to have a deeper root. To-day we have to recognise disease as a complex phenomenon of various factors coinciding in time and space. The focus of interest should widen to encompass the relationship between the various biological factors of this complex and their respective socio-economic and geographical environment. These factors according to the author may be termed as Bio-Socio-Geogens.

If we attempt to map the pathological regions of the world we find that the main divisions appear at a first glance to be correlated with local diets, cultures, religion and standard of living. The importance of social and environmental factors in borne by the fact that there are regions of the world where disappearance of these diseases was brought about by social and environmental transformation. The distribution of diseases vary with different geographical conditions as population distribution, racial varieties, cultural and other behaviours of man. This variation may be, to a certain extent, due to the difference in regional characteristics which for India are briefly described below:

Regional geographical characteristics of India:

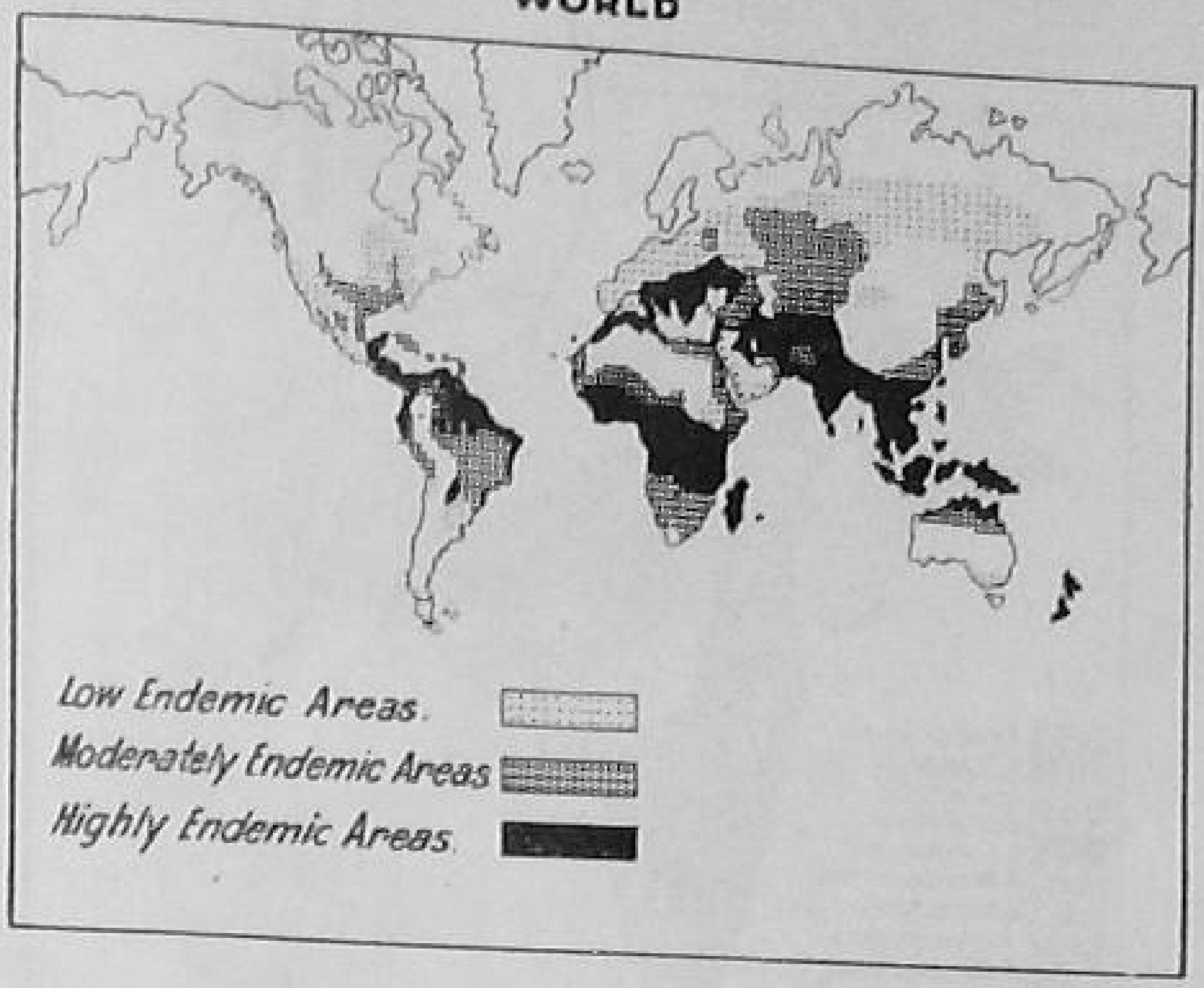
India is composed of three earth-features viz., the Great Mountain Zone of the north (Himalaya), the Plateau of the Peninsula (the southern tableland) and the Regions of Depression (the Indo-gangetic plan) each differing in the physical and geological characters. India has also marked variation in climate, produced out of the country's characteristic relief and location which control its meteorological conditions. Its main weather feature is determined by the cycle of solar activity. Meteorologically the Indian year is divided into three well marked seasons viz. (1) the cool season, with little rain, from November to February; (2) the dry season from March to June; and (3) the wet season with heavy monsoon rains and the lowering of temperature, from July to October. In short, the weather is Tropical Monsoon type—characterised by hot rainy summers and cold dry winter.

Again, the country may be dividend into several climatic zones, each of these exercising its inevitable influence on the economic practice, health conditions and the modes of living of its inhabitants. The north-west region is very hot and dry in summer, cold and most in winter. The cold-weather cyclonic rains render the climate bracing and energetic. The reas is inhabited by stalwart races. The low lying regions of the eastern Ganges plain and the Eastern and western coast strips, have depressing climate, and are inhibited by people of comparatively modest physique. Intensive cultivation and multiple cropping support a very heavy population (850 persons per sq. mile). The arid conditions of the southern Table land as a whole offer poor facilities for agriculture. The inhabitants are hardy but poor.

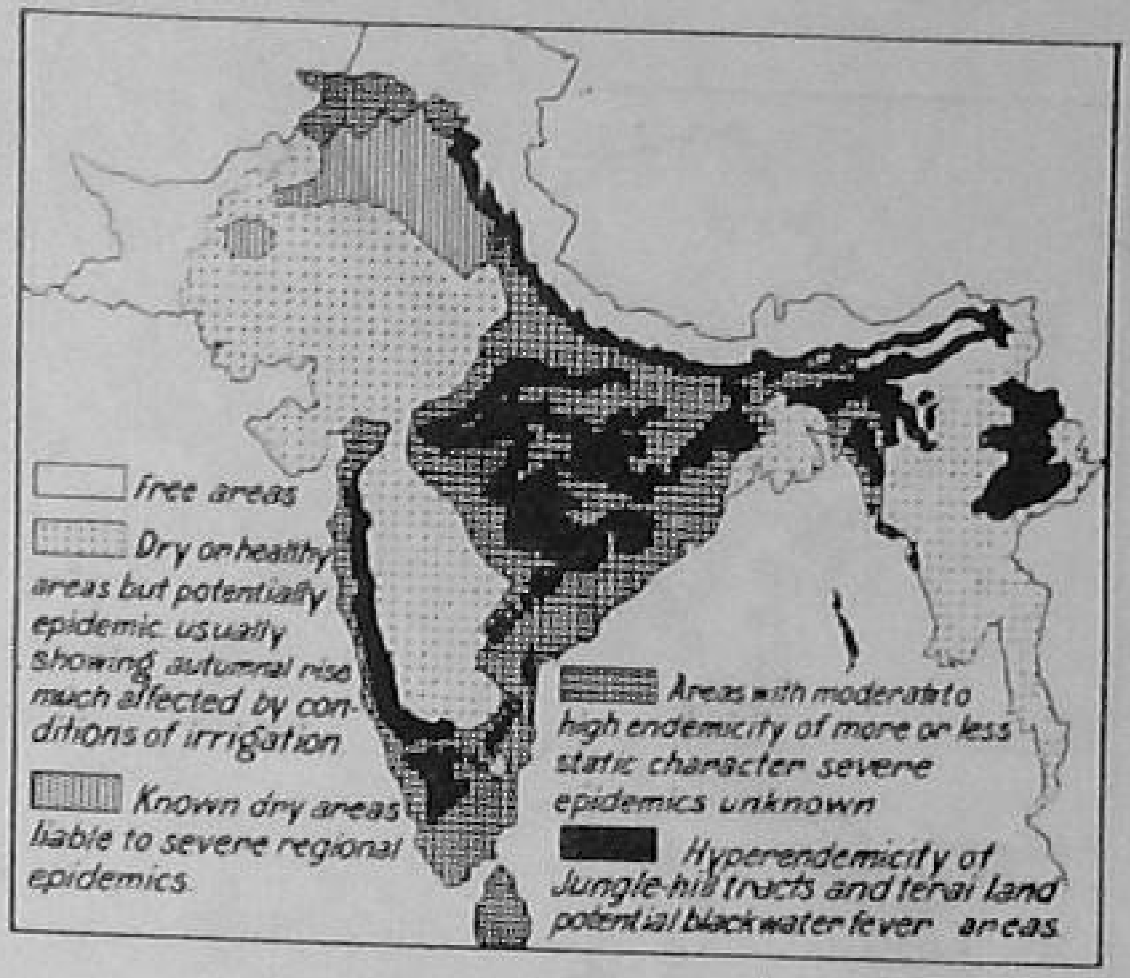
In a variable climate, such as we see in India, one year may be warm and wet nd full of crops.

Distribution of endemic malaria.

WORLD



INDIA & PAKISTAN



and another hot and dry and famine-stricken, one region may be inhabited by a healthy and prosperous peasantry (as in the Punjab) and another by a half starved, disease-stricken mass of humanity (as in the Central India). A regular series of changes in diet, dress, health and efficiency of the people in sympathy with seasonal variation take place along with the changes in the disease prevalence.

The relative distributions of some important diseases are given in a series of maps with descriptions in this note.

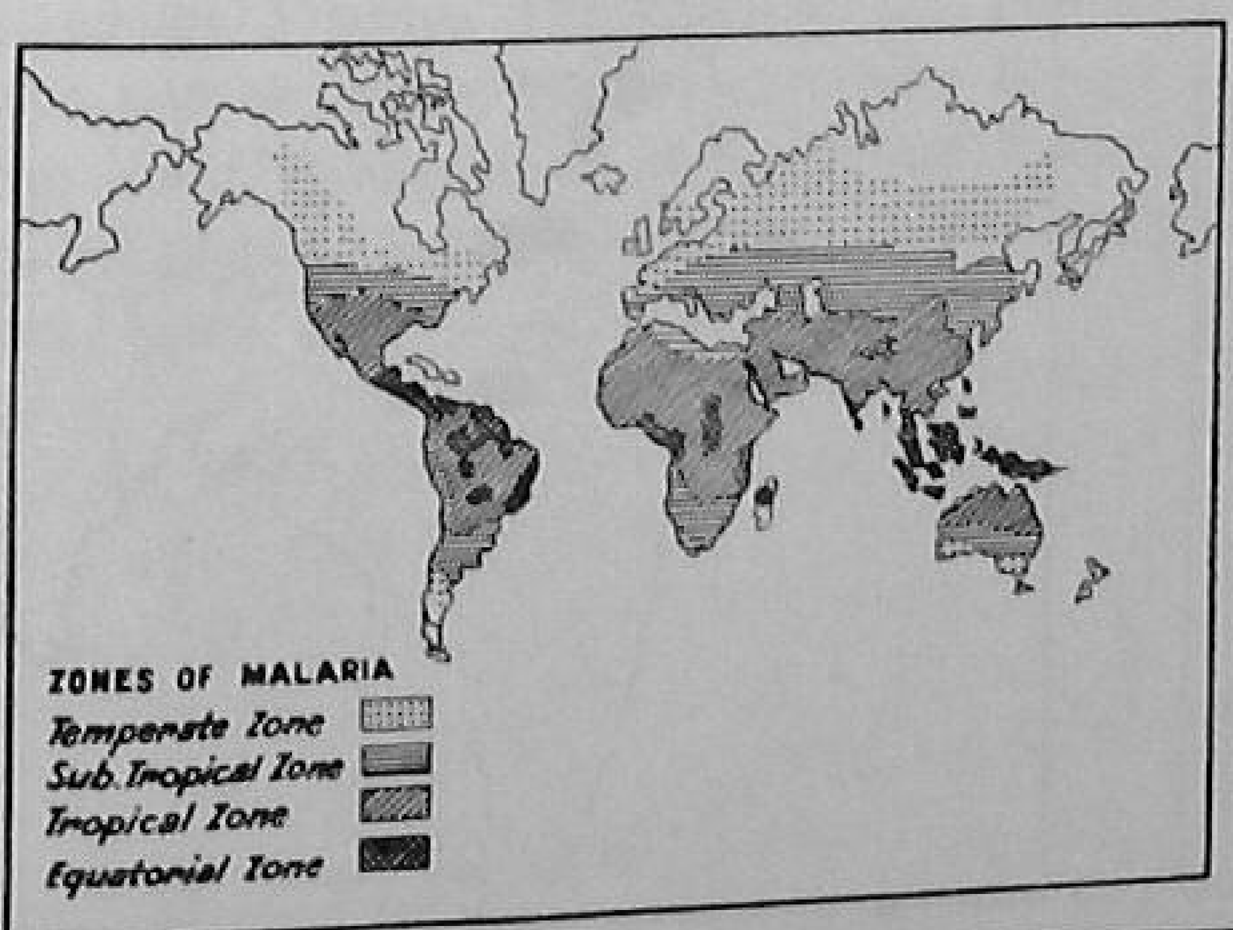
MALARIA

The map shows the distribution of the degree of malaria in different parts of India based on the splenic rates and other criteria. Comparing this distribution with the agricultural and climate region of the country it is seen that it is prevalent in greater degree in the areas known for rice-cultivation. The reasons may, however, be the wrong or faulty irrigational practices adopted in relation to rice-growing. These areas also correspond to those of high rainfall. Man-made changes in the physiographical conditions such as, building of bunks on river, and construction of road, railway, burrow pits, irrigation projects, etc. facilitate malaria incidence.

The distribution of malaria vectors also vary in their distribution and habits. For instance while *A. minimus* and *A. fluviatalis* prefer to breed in slow running streams, *A. culicifacies* shows a preference for fresh water pools, and *A. stephensi* has adopted itself to urban conditions and breed with equal facility in wells and over head domestic cistems. Altitudes above 5,000 ft. is non-malarious due to the absence of vector species.

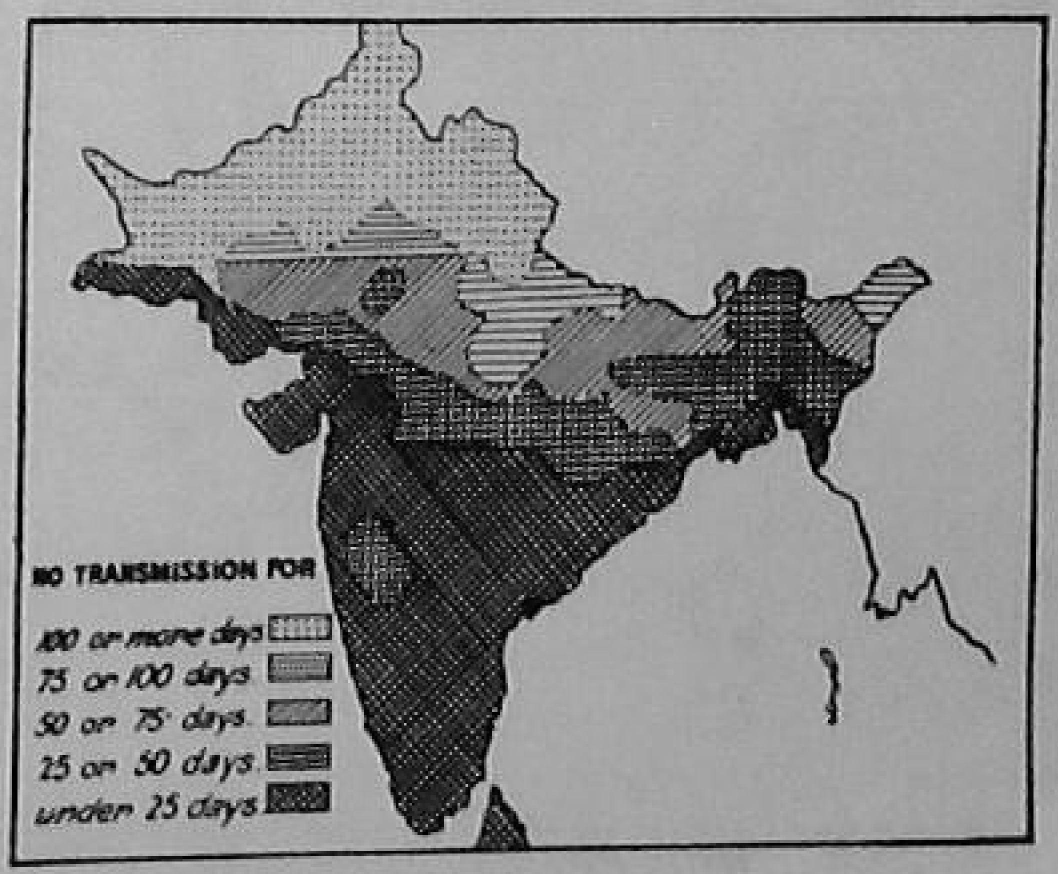
Zones of malaria

WORLD

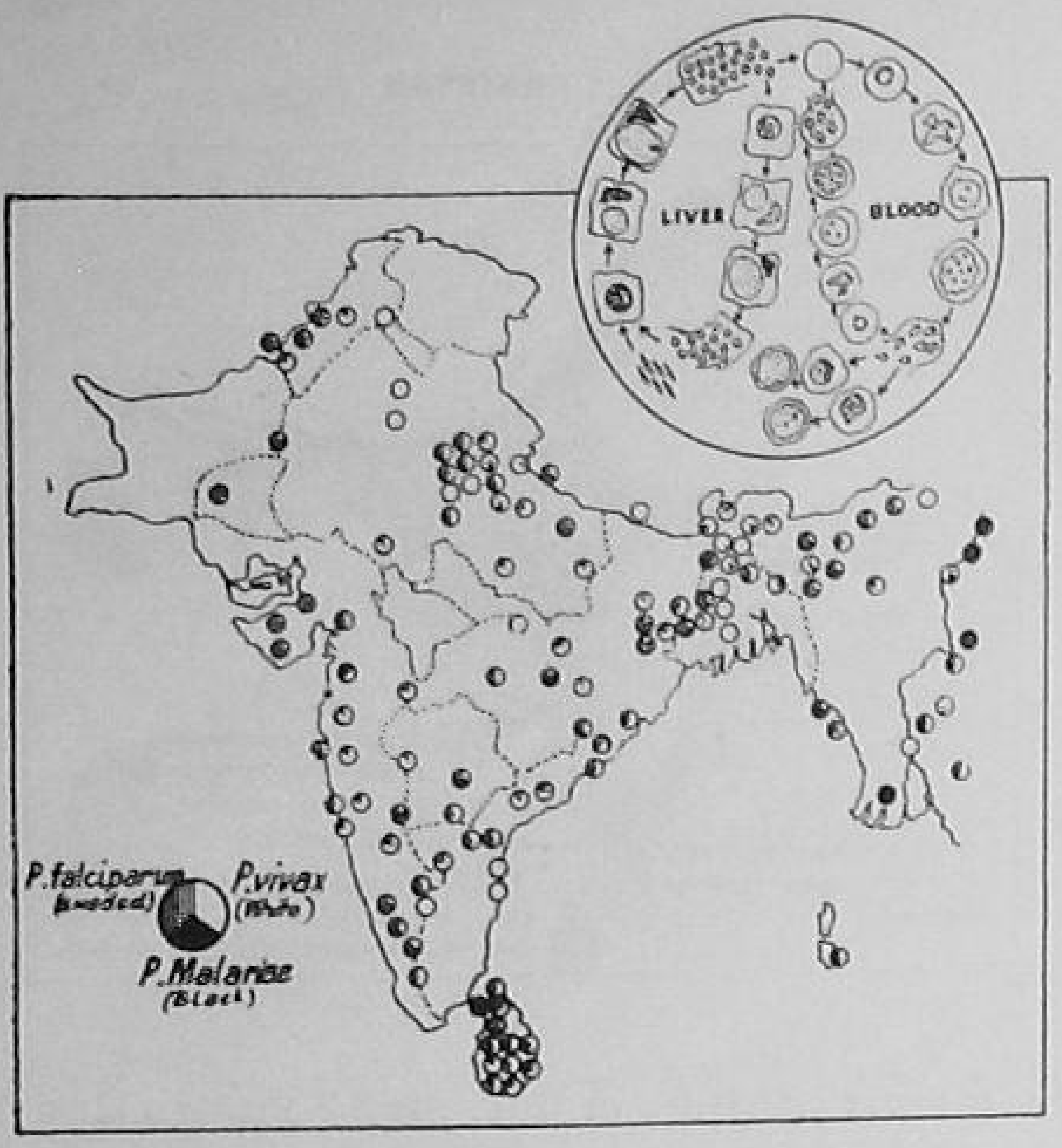


Average annual period of transmission

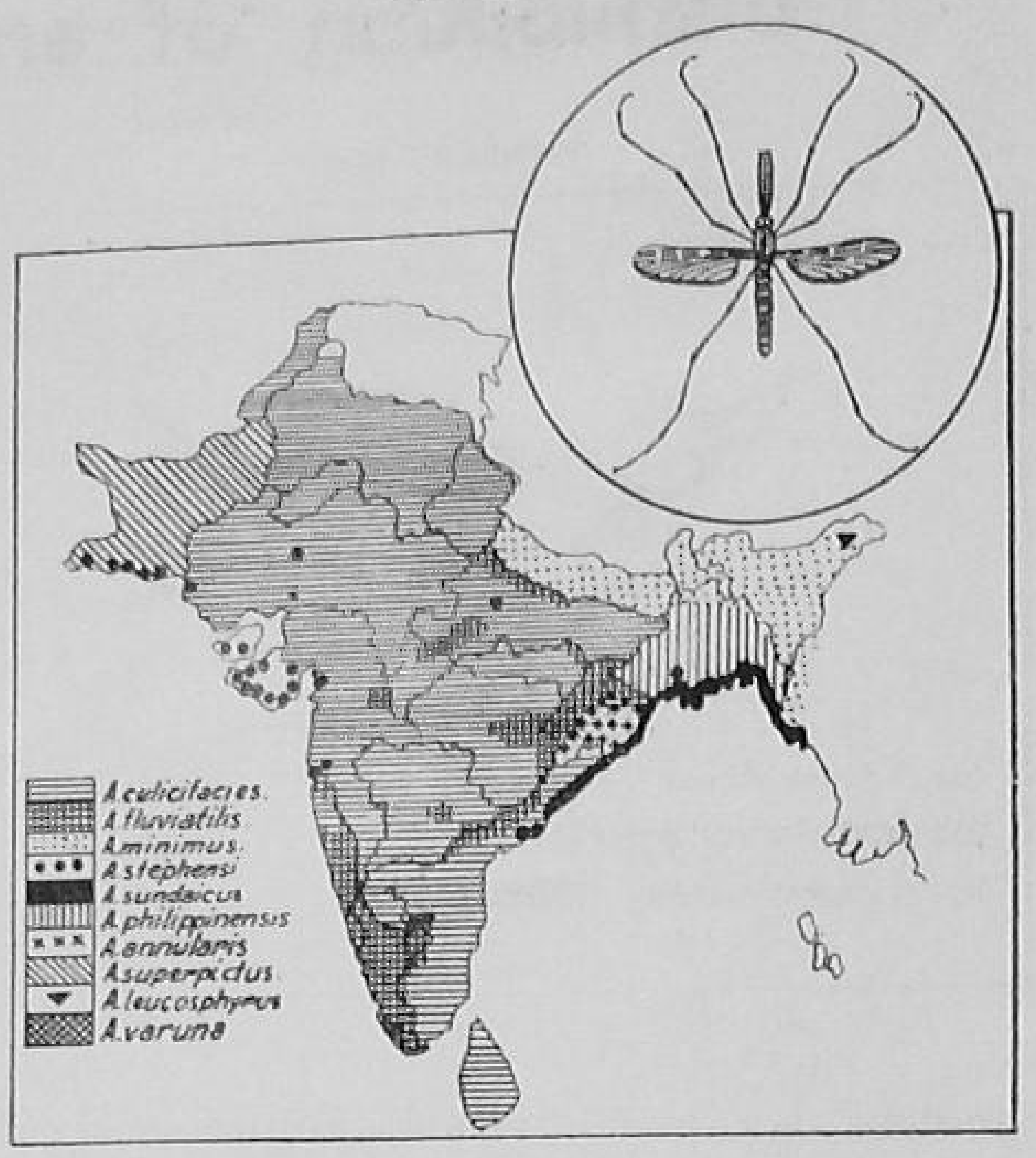
INDIA & PAKISTAN



CAUSE



CARRIER

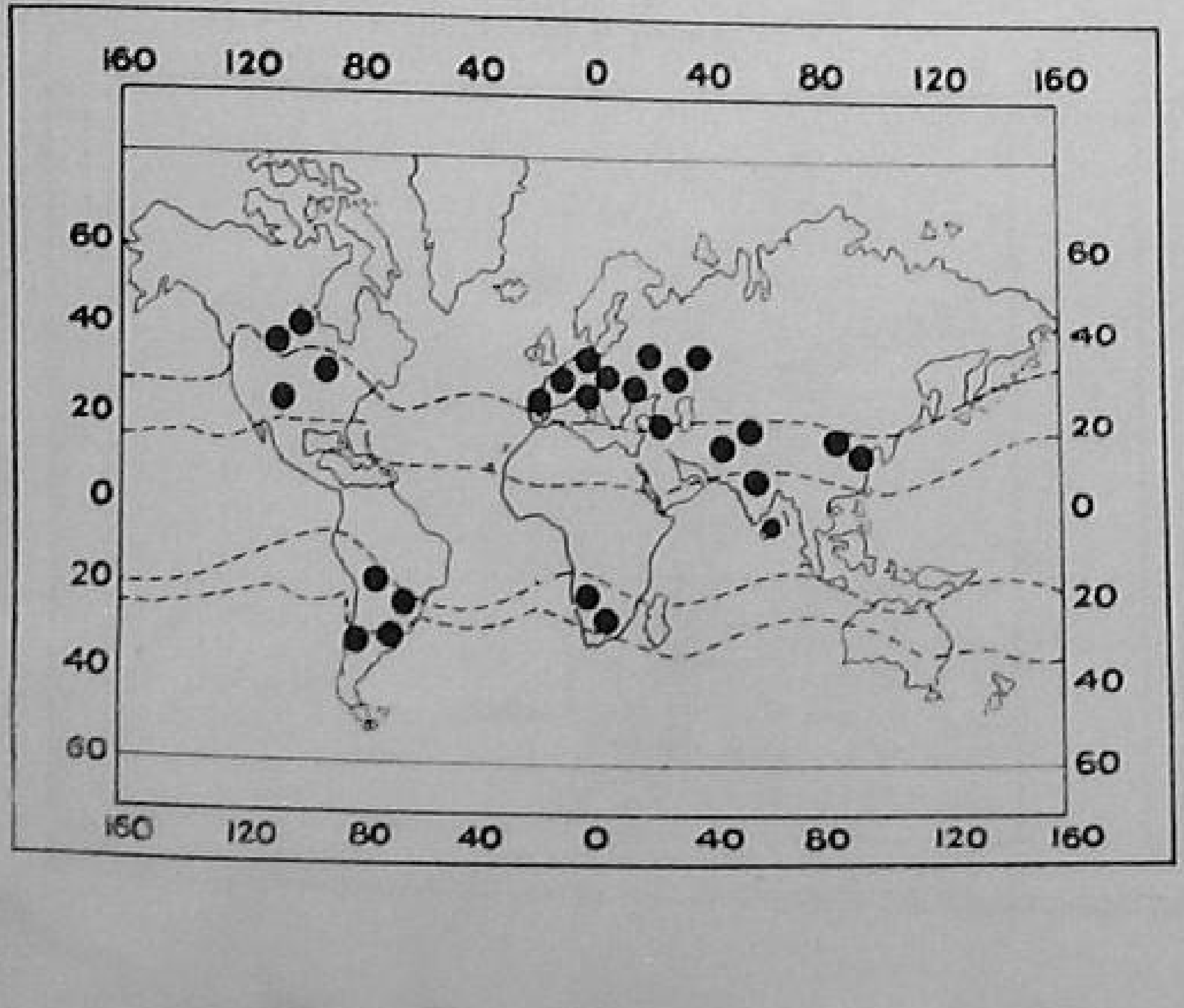


CHOLERA

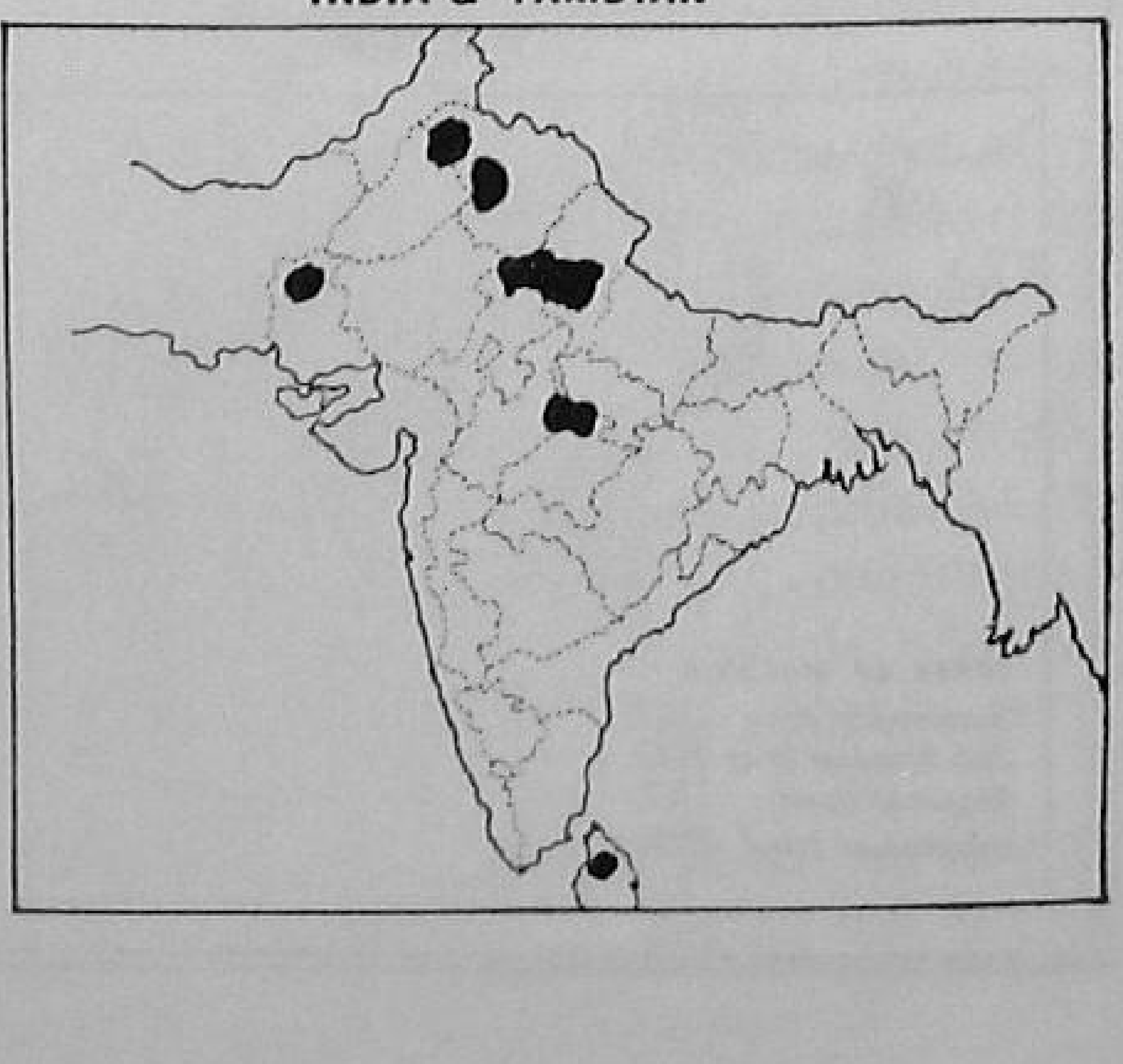
Cholera which takes a heavy toll of life each year shows a wide range of variation in the yearly incidence and geographical distribution. The annual average number of deaths by quinquennial periods between 1871-and 1941 varied from 1,41,000 to 4,44,000. There is however a downward trend of incidence after the 2nd World War. Although the incidence and mortality vary from year to year in the same state and show a short term periodicity. The West Bengal, Orissa, Madras (including Andhra), Bihar, Madhya Pradesh and to certain parts of Uttar Pradesh. According to Swaroop et al, cholera is actually endemic in the deltaic areas of the big rivers. The map given here shows the relative distribution of cholera deaths in different states in India during the triennel period of 1947 to 1949.

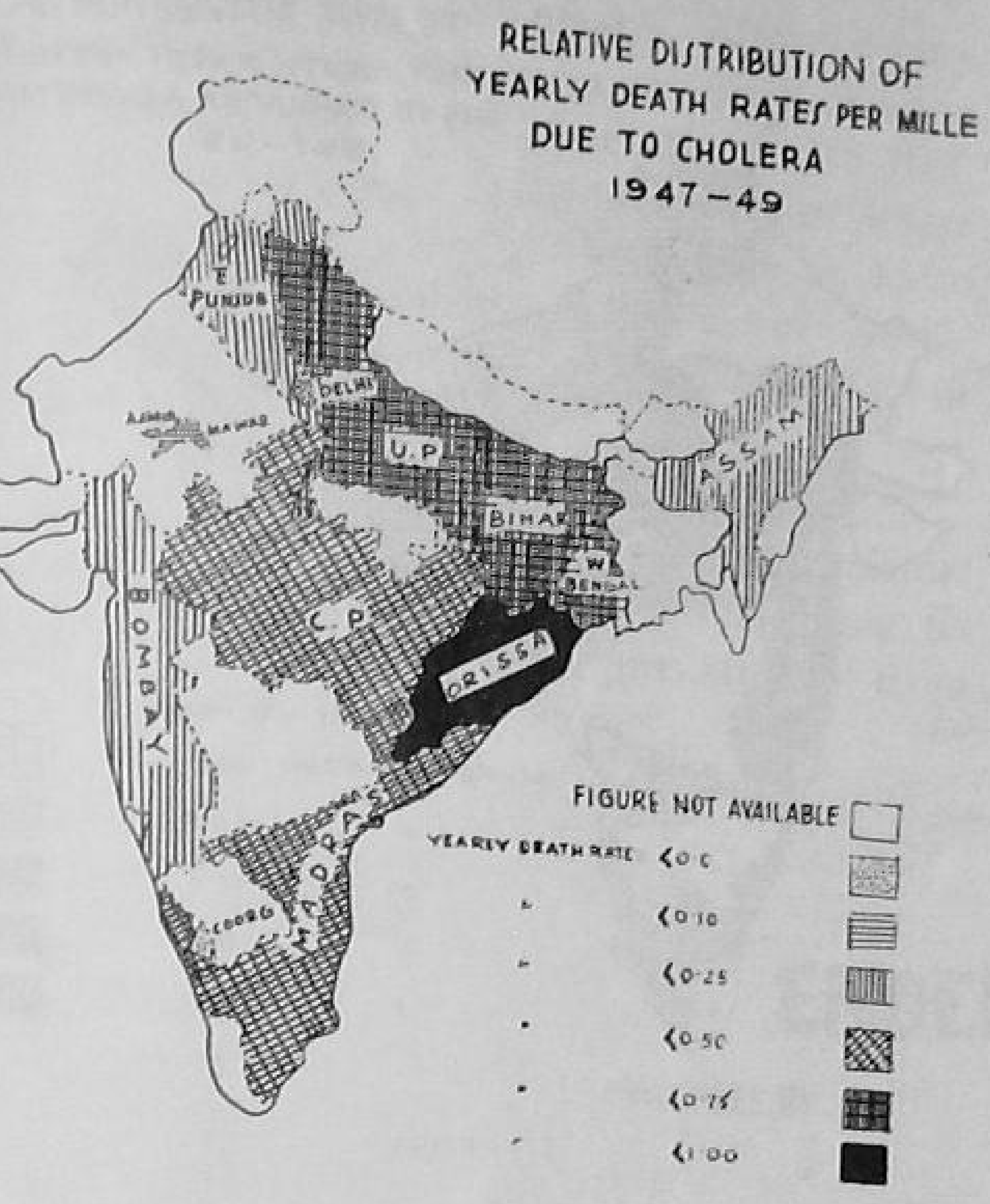
Regions of Epidemic malaria.

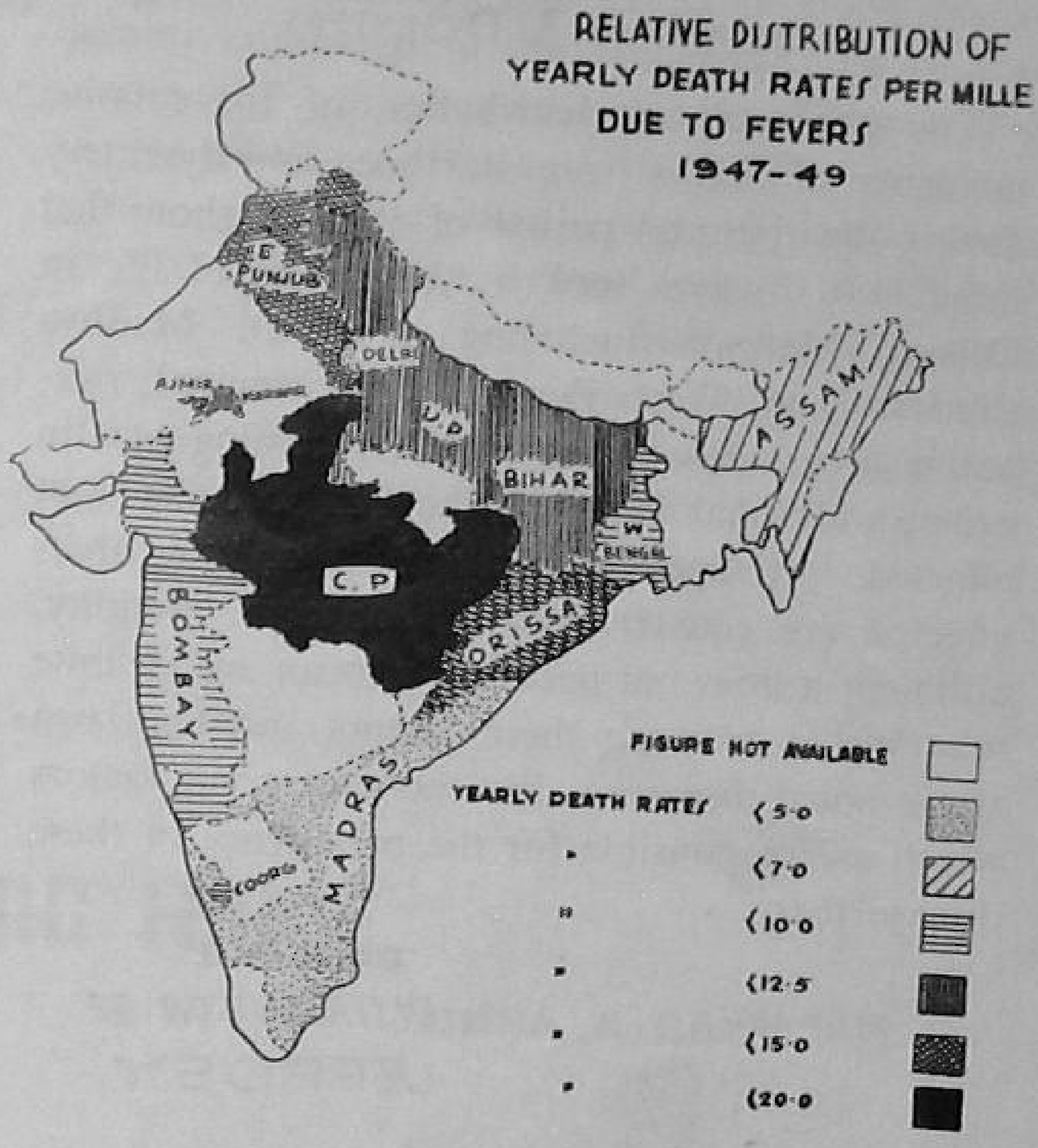
WORLD

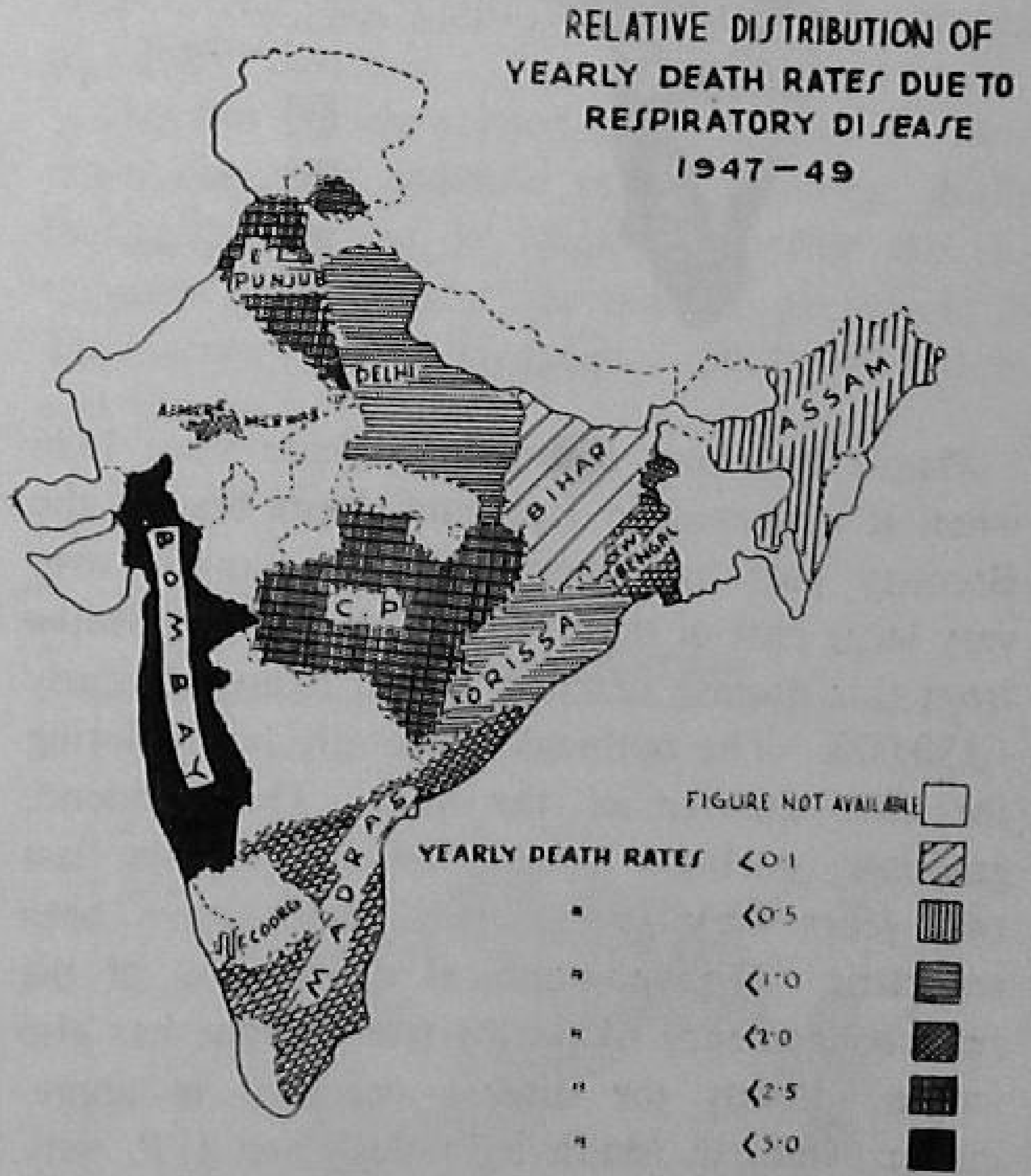


INDIA & PAKISTAN







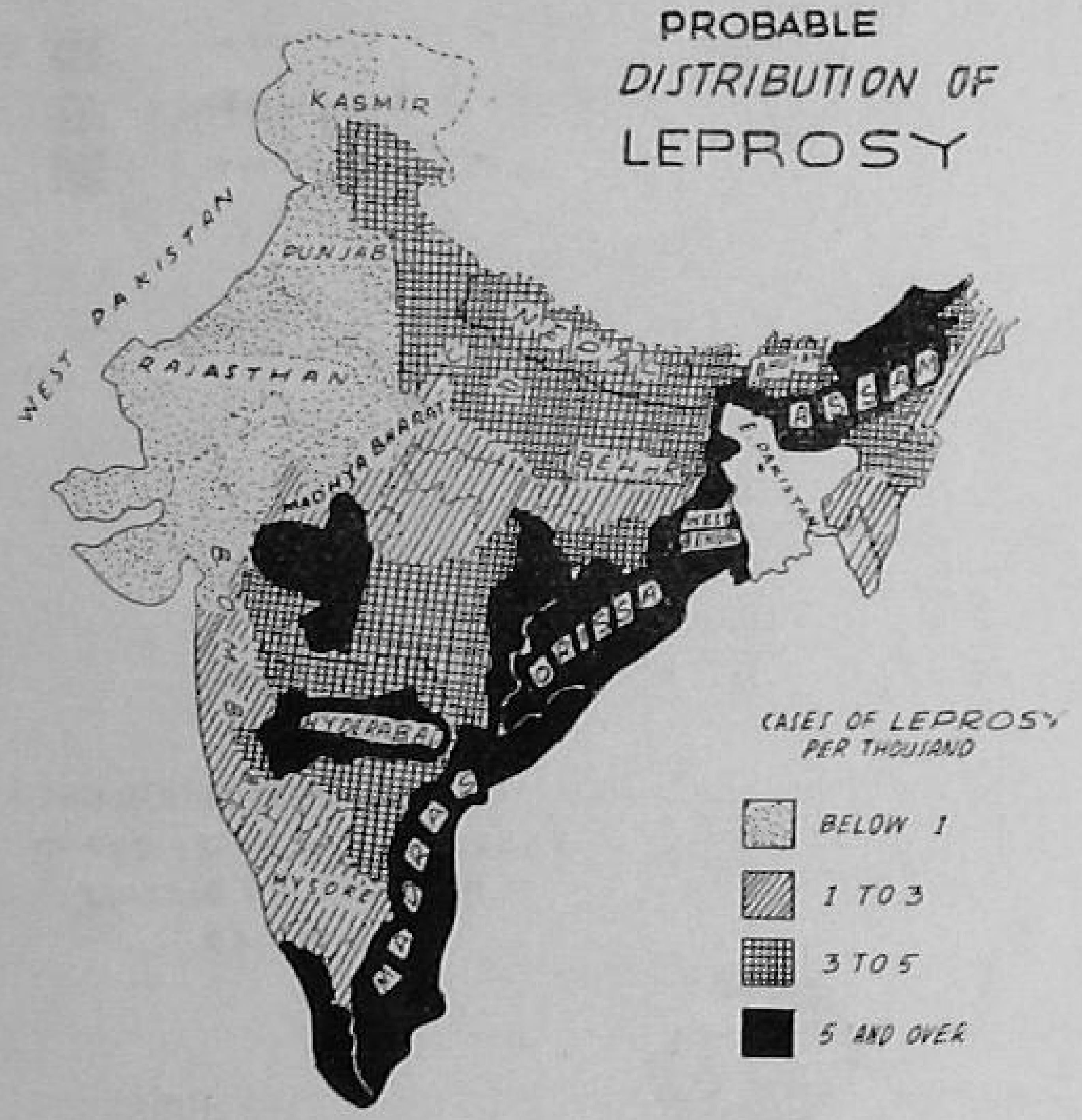


Respiratory Diseases

Respiratory diseases take fairly heavy toll every year being 718% of the total deaths. The relative geographical distribution as given in the map during the treannial period 1947-49 show the greatest mortality in the Bombay state followed by Madhya Pradesh and the Punjab. The next in order are Madras and West Bengal. Orissa and U.P. and least in Bihar and Assam. This relative distribution has not very much chngead since long.

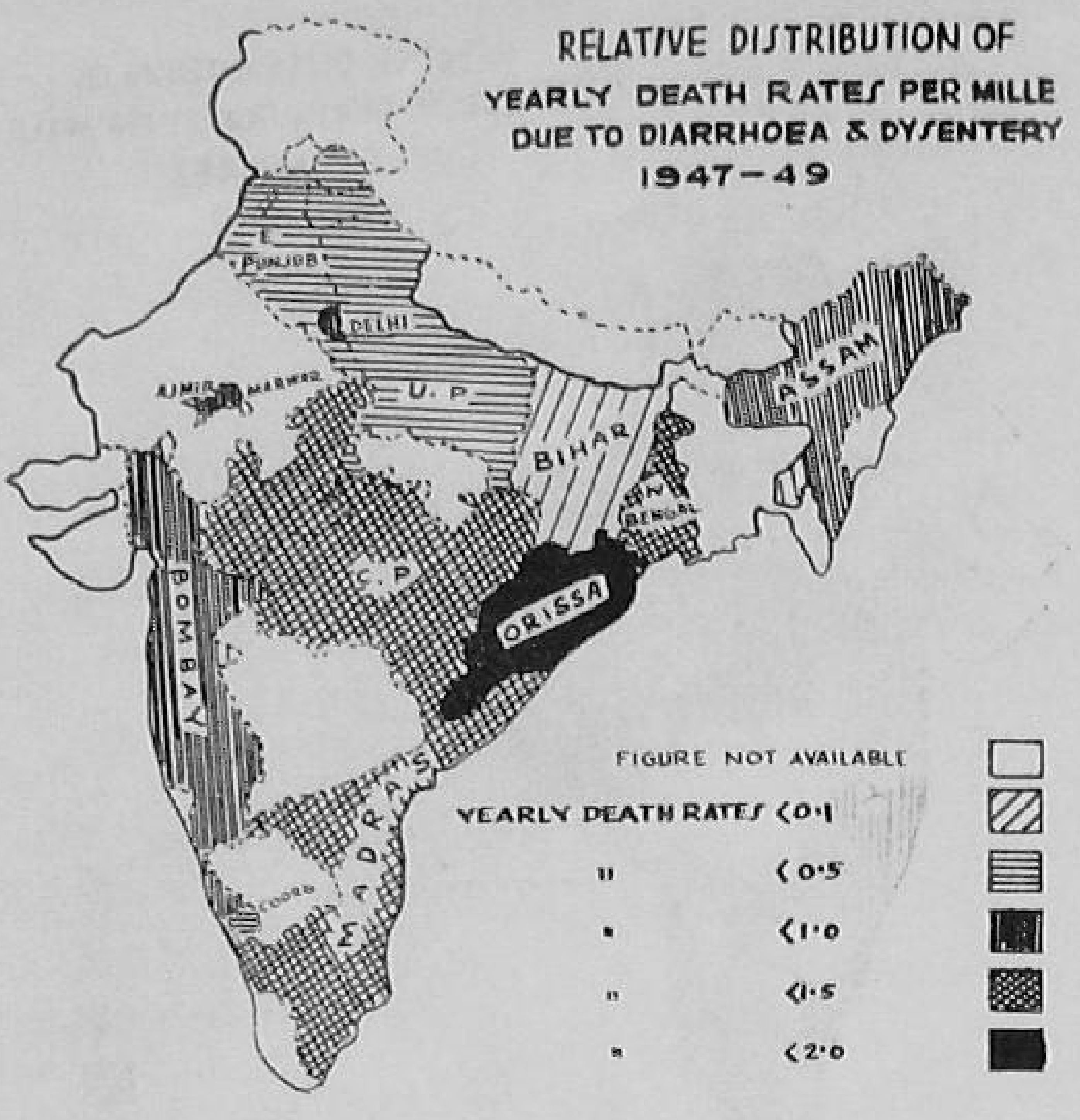
Diarrhoea & Dysentery

The geographical distribution of the relative incidence of deaths from diarrhoea and dysentery during the triennial period of 1947-49 show that these two diseases took a higher toll of life in Orissa, Madras (including Andhra), Madhya Pradesh and West Bengal, the principal rice-eating areas, Assam and Bombay coming next in order, and Bihar U.P. and the Punjab being least affected. It appears that most of the areas affected are coastal or areas of high humidity, although it does not necessarily mean any definite relationship between these factors and they two above noted diseases. But there are some factors which are responsible for the persistence of these disease there.



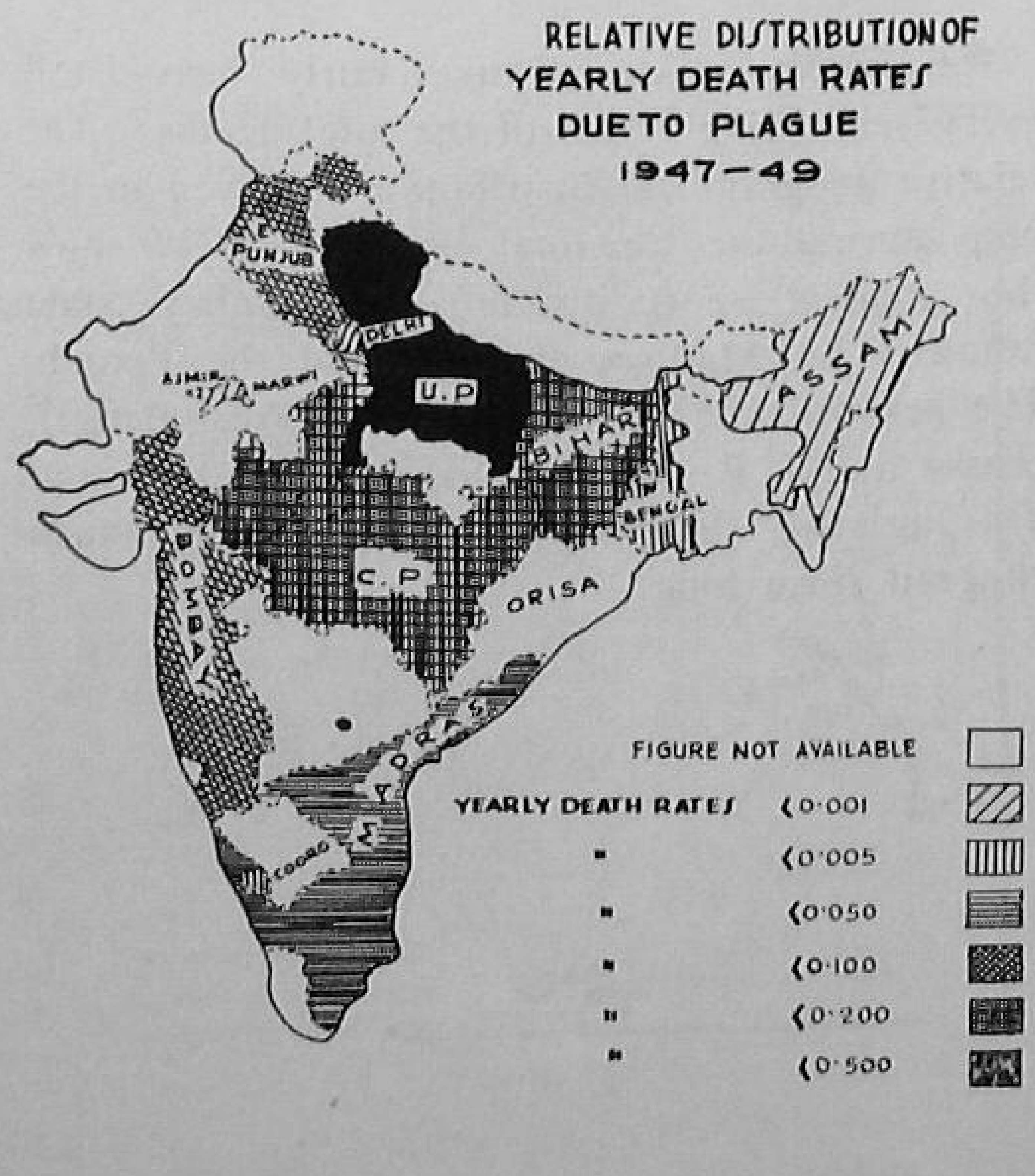
Plague

Plague had been a dreaded disease since 1896 when it appeared in Epidemic form first in the Bombay part and then spreading rapidly over very large part of the country. In 1904 the deaths from this disease reached a high figure of nearly 1,150,000. The outbreaks generally occur during the first quarter of the year. The incidence gradually declined since 1910 and for the last two years very few plague deaths have been reported. The geographical distribution of the relative incidence of deaths from plague has also varied. Lately the disease occurred in appreciable extent in Madhya Pradesh and U.P. only. The relative distribution of the disease during the triennial period of 1947-49 show the following order of incidnce. U.P., M.P., Bihar, Bombay and Punjab, Madras, the West Bengal and Assam.



Leprosy

The total number of leprosy patients in India is believed to be nearly 1 million i.e. 1/5th of the total World incidence. The relative distribution of Leprosy in India is given in the map has been prepared by the Hind Kust Nibaran Sangh according to the surveys concluded in the scatters areas of each state. The map shows that an almost contiguous stretch of area formed by the states of Travancore & Cochin, Madras (including Andhra) part of Hyderabad, Madhya Pradesh, Orissa, West Bengal and Assam. The northern and western parts are much less affected.



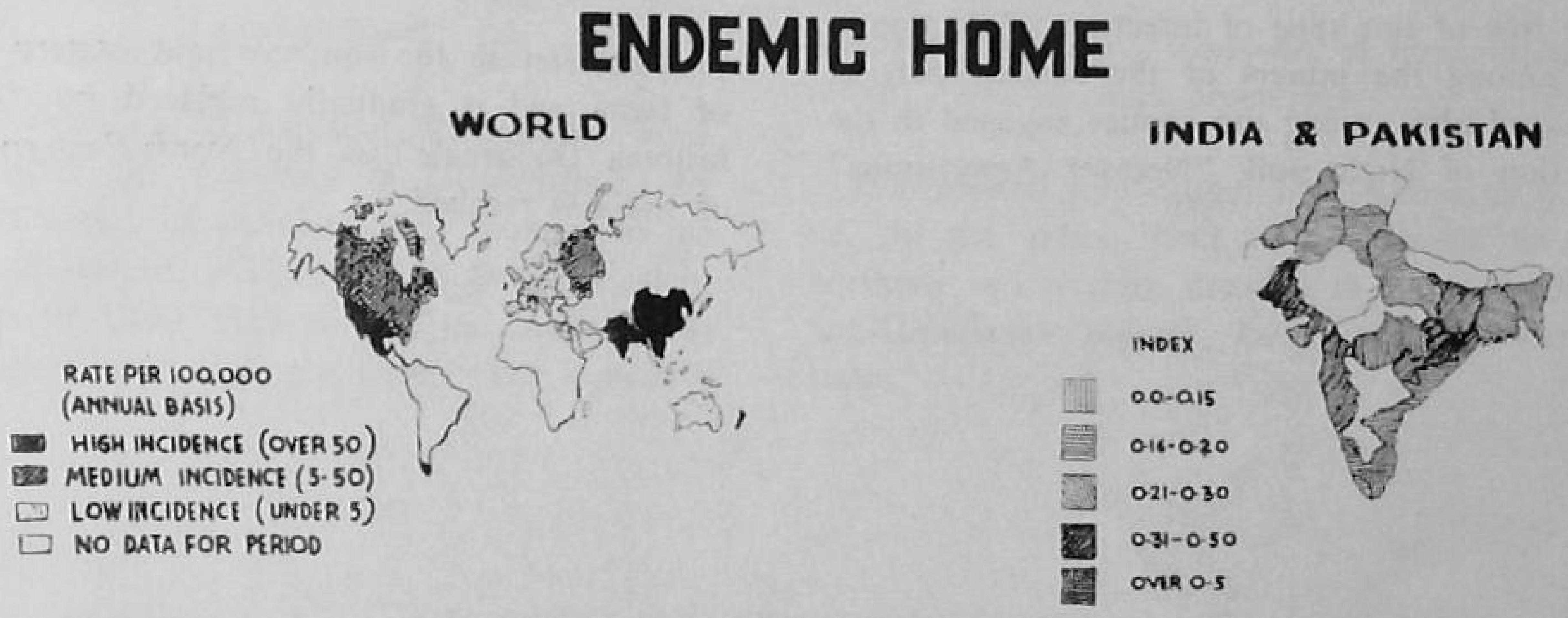
In the highly endemic areas its incidence may range from 2 to 5%. In some restricted areas in such endemic regions the cases may rise to 10% and there are certain individual villages where the incidence may show a rate as high as 15 to 20%. In the non-endemic regions of North-western India the rate of incidence is 0.01% or as low as .001%.

Smallpox

Smallpox has been one of the major epidemic diseases of India, the striking feature being its variability and short term periodicity. Even though the incidence rate has come down considerably compared to the earlier decades of this century the average annual number of deaths due to this disease still exceeds 50,000.

The geographic distribution of deaths from smallpox during the trenniel period of 1947-49 was as follows: Ajmere Merwara—less than 110 per 1,000 (highest rate), Delhi state—less than 0.5, Bombay, Orissa and West Bengal less than 0.2, Bihar, M.P. U.P. and the Punjab less than 0.15 and Madras and Assam less than 0.1 per 100 (the lowest incidence).

Smallpox

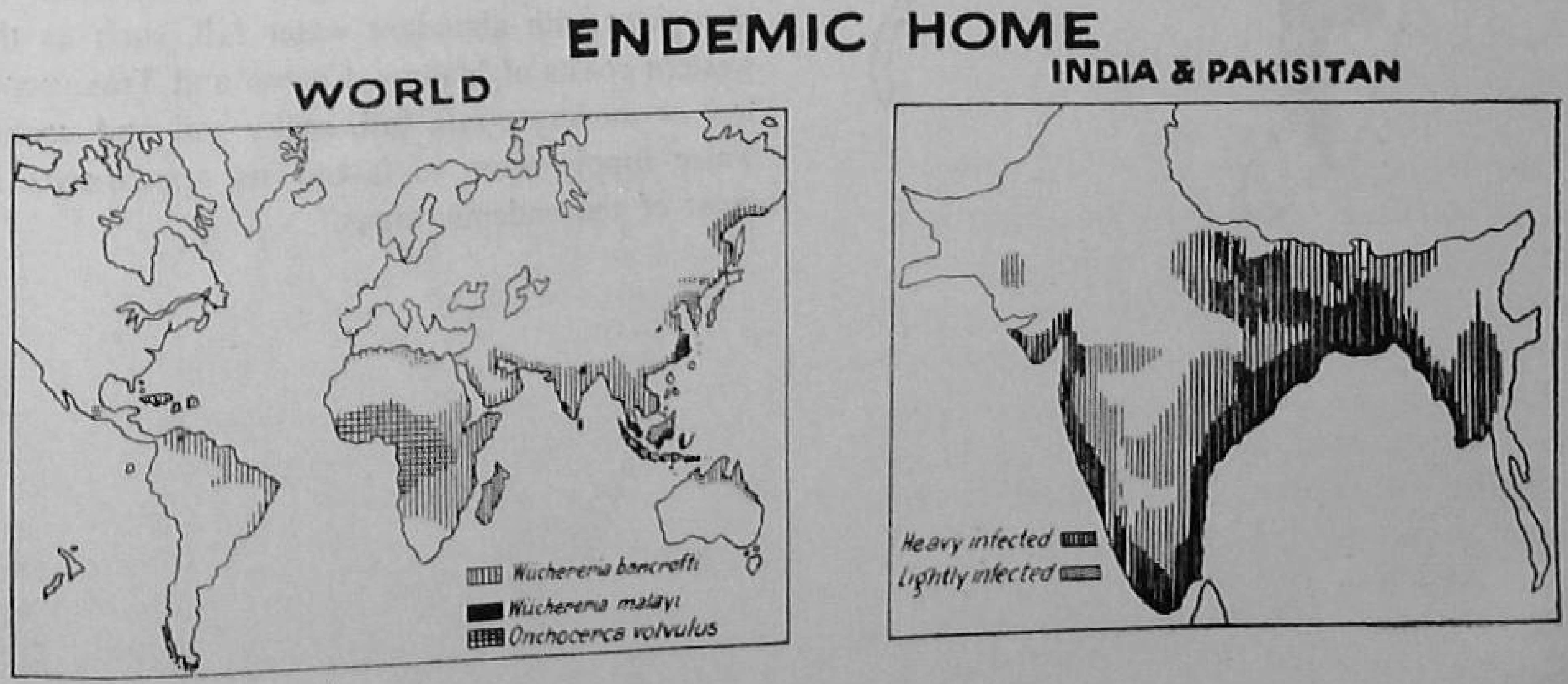


Filariasis

The geographical distribution of the filariasis in Indi is not yet fully known. The surveys so far carried out shows a contiguous affected areas from Travancore-Cochin, Madras, Andhra State, Orissa, parts of Hyderabad West Bengal certain districts of Bihar and Madhya Pradesh a few areas in Bombay, Gujrat and the Eastern districts of Uttar Pradesh.

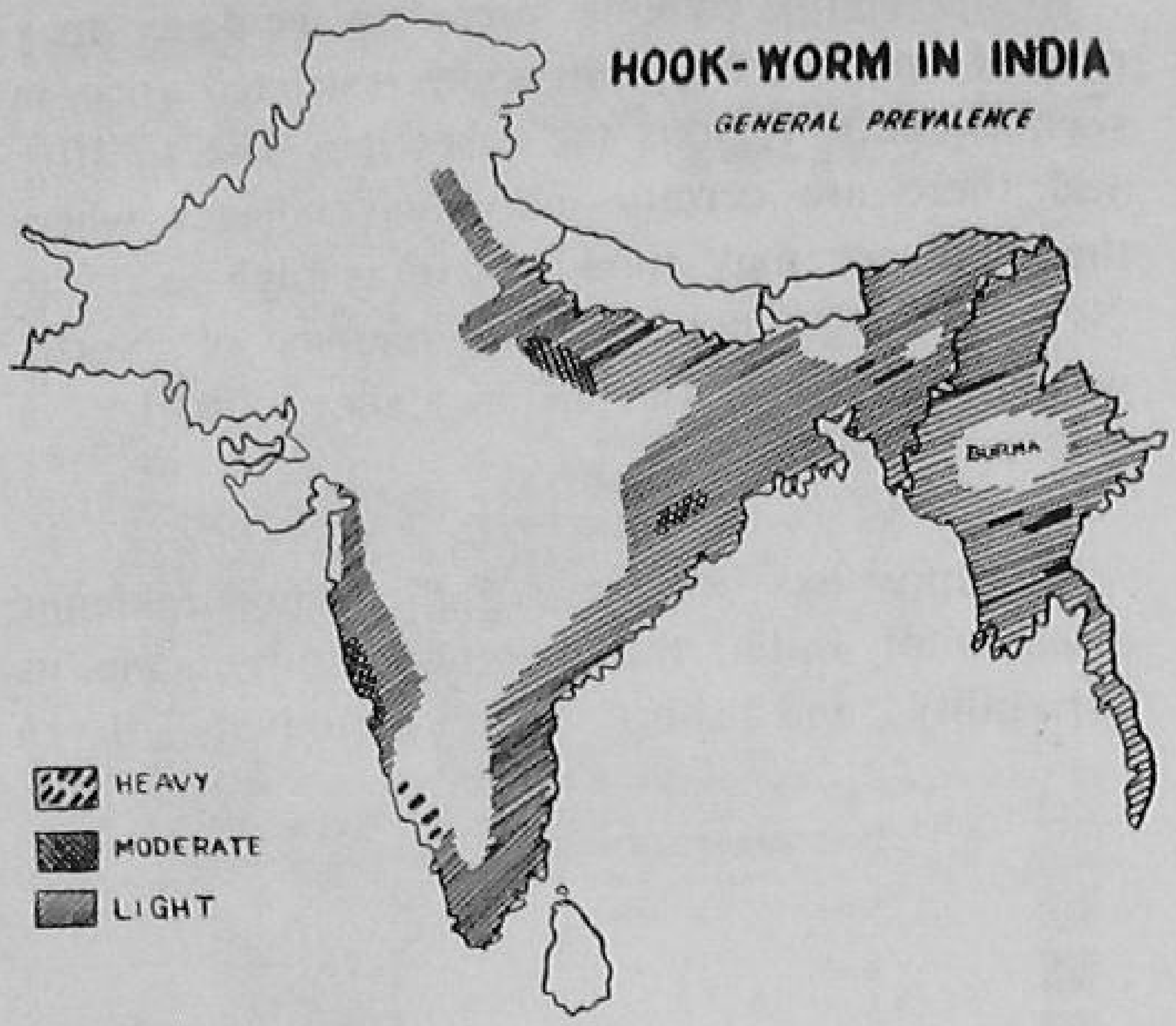
The two closely related parasites are *W. Bencrofti*, the more common variety affecting chiefly the genitation and *W. malayi* affecting the extremities. The latter is mainly prevalent in Travancore Cochin, Hyderabad Madhya Pradesh and Orissa.

Filariasis

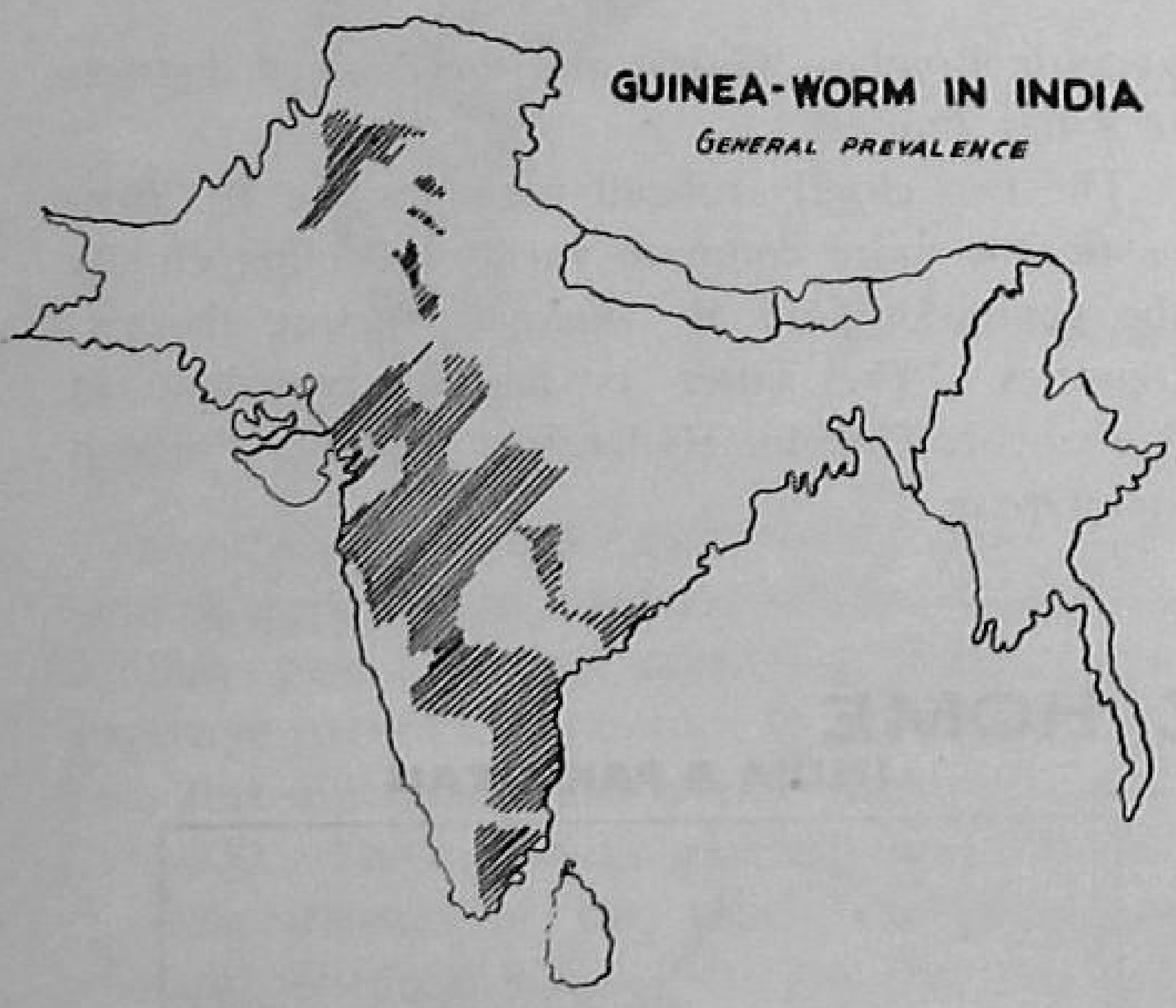


Hookworm

It is estimated that the incidence of infection with hookworm in the whole country will vary from about 40 to as high as 70 or 80 per cent. It is thought that at least 210,000,000 of India's people are infected. The highest rate of infection occurs in the tea-garden sections of Assam and Bengal and in the southern part of India in the tea and coffee plantations of coorg, Tranvancore and South Kanara, infection with hook worm is modarately endemic in the central part of Bihar, the eastern part of Madhya Pradesh and Uttar Pradesh along the foot hills of the Himalaya Mountains, and in some areas of Madras. Sections of North-East India are stated to be relatively free of this type of infection. Infection is high among the miners of the eastern part of India and also among the coolies engaged in the collection of Night soil, "Necator Americanus"



predominates in the southern and eastern parts of India and is gradually replaced by "Ancylostoma Duodenale" as the North-Eastern part of India is reached.

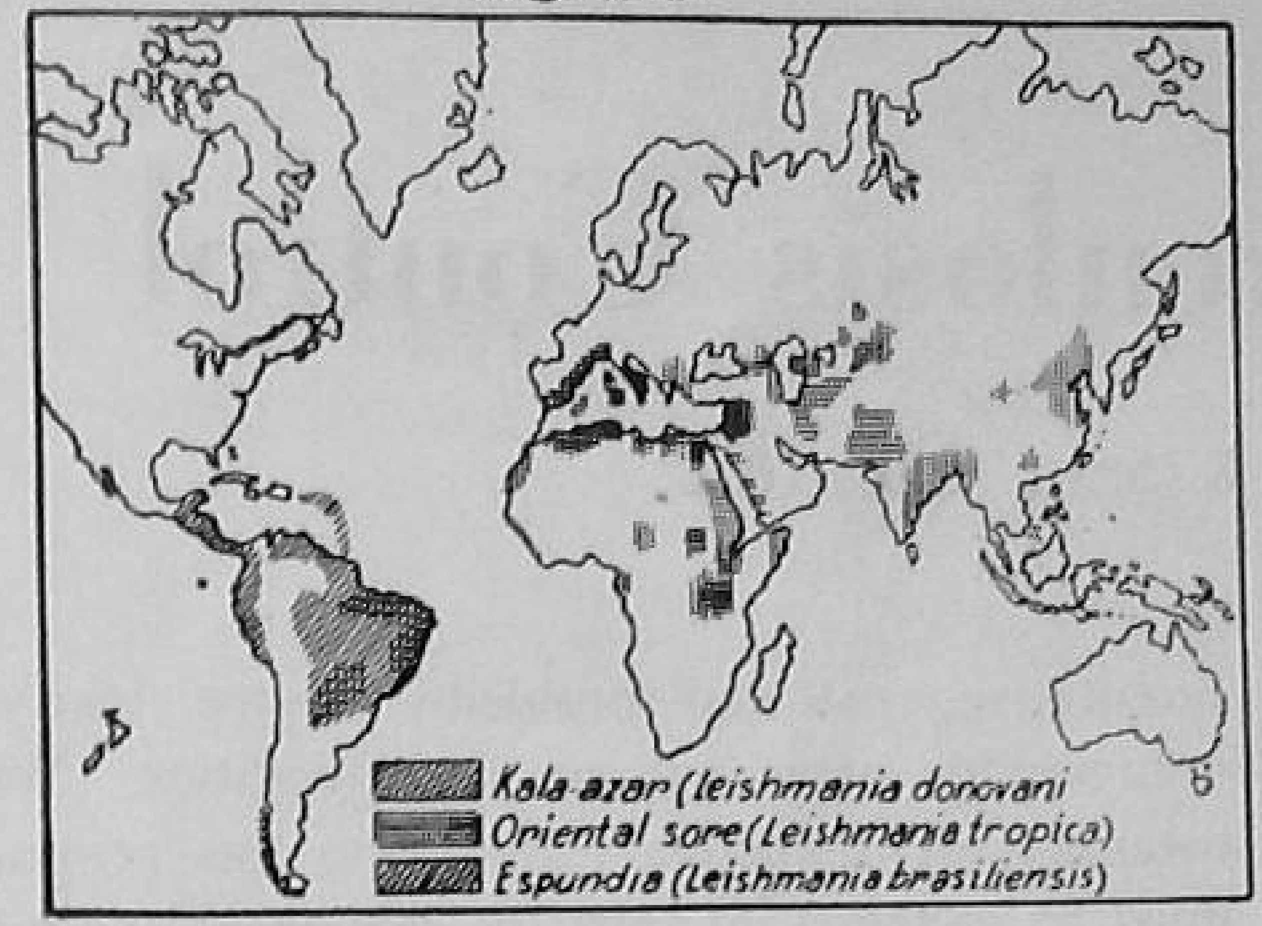


Guineaworm

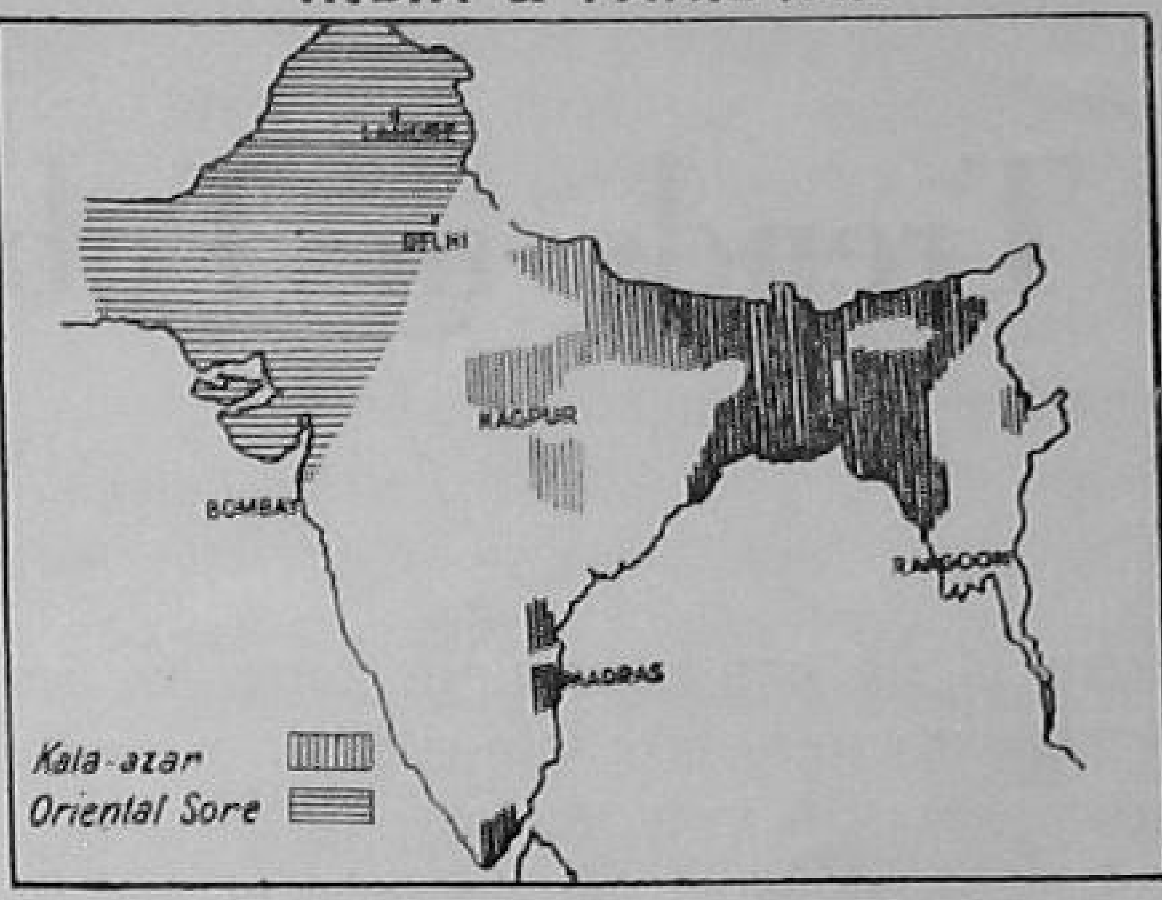
Dracontiasis or Guineaworm caused by "Dracunculus Medinensis", is wide-spread in certain restricted rural areas of India in which water from step wells and ponds is in General use. Many of the states in Rajputanas and Central India, Madhya Pradesh, Bombay State, Hyderabad and Madras. The infection is not found in well-watered areas like Bengal, Assam, Bihar or in regions with abundant water fall, such as the western coasts of Madras, Cochin and Travancore low or moderate rain fall, rocky soil and scanty water supply seem to favour its appearance in most of the endemic areas.

ENDEMIC HOMES

WORLD



INDIA & PAKISTAN



LEISHMANIASIS

The incidence of kalaazar dramatically came down after the discovery of Ureastibamine by Brahmachari. Its distribution is confined to the states of Assam, Bengal, Bihar, Orissa, Eastern districts of Uttar Pradesh and the coastal areas of Madras and Andhra state. The causative protozoa *Leishmania donovoni* is transmitted by sandfly—*phlebotomus argentipes.*

The oriental sore caused by *Leishmania tropica,* on the other hand, is distributed in the northern and western districts of Uttar Pradesh, Sub-Himalayan regions, Delhi and the Punjab states.

Trends in Tuberculosis Control

Dr. P. K. Sen, Calcutta.

Design of an anti-tuberculosis campaign for any community must take into account two most important forces, namely, the stage in the evolution of herd-resistance, and the level of general sanitation and standard of living. To combat the source (patient), to control the medium of infection (sputum), and to improve the resistance of the host (non-tuberculosis population) are basic specific measures. Differences in design are mainly due to the emphasis on one or the other according to the financial and organisational abilities of a community.

To combat the source, institutional segregation is still the best but most expensive policy. On a very rough estimate there are 2.5 millions patients in India and only 16,827 beds, or one bed for 148 patients. Domicilliary segregation and treatment under the guidance of the clinic was, therefore, given very high priority in our planning. There are only 166 clinics in India to-day. The second plan intends to establish clinics up to the district level.

With the introduction of more potent anti-tuberculous drugs the importance of domicilliary treatment as a public health measure by early conversion of the sputum is being gradually recognised. Many problems beset the path of such a recognition. ICMR, in association with BMRC and WHO, is starting an investigation in Madras to solve some of these problems.

A very recent trend is to treat by INH and another associated drug all recent tuberculin converters. This may prevent progressive primary disease and also the evolution of the disease in later age periods.

On gaining knowledge in host-parasite relationship and the behaviour of early disease, it become necessary not to wait till the patient seeks medical aid but to sieve out cases from the community. Advent of miniature fluro-photography has solved the problems to some extent but it is still too expensive. Except in a few special fields, this program is nonexistent in India for prohibitive cost and problems of the load of innumerable cases without care facilities. With extension of domicilliary treatment this program must be included, at least for sections of population where the incidence is high, as drugs act best in early cases.

The control of transmission of infection, general hygienic measures and proper sputum collection and disposal are still the standard methods. To implement them far more value is attached to-day to personal contact by social workers than the general propaganda posters etc.

The difficult path of discovery of a method for improving resistance to an unassailable degree still remains untraced. The claim of BCG vaccination affording partial protection has been substantiated to a great extent. Only a mass vaccination program covering vast majority of the uninfected population within a short period and sustaining it for decades can have appreciable effect on the incidence of tuberculosis. Recently, on recommendation and help from WHO, India has accepted and given highest priority to this program in both plan periods and by the end of May, 1956, 74,470,313 and 25,666,816 were respectively tuberculin tested and vaccinated. We have a long way to go yet.

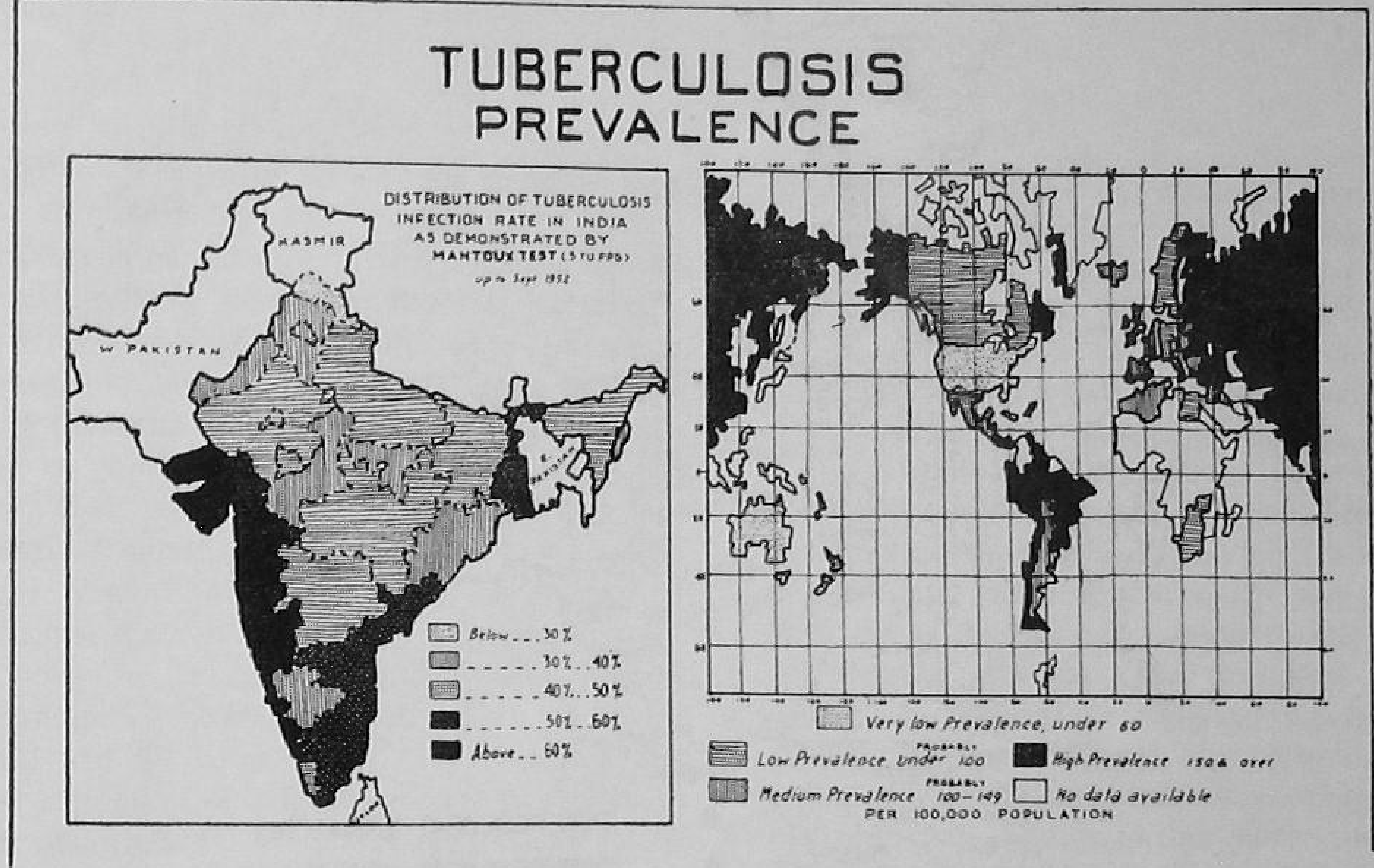
For rational and economic planning an intimate knowledge of the prevalence of the infection and disease in different parts of India, a country of diversity, is essential. There had been many limited studies showing low rates in rural and very high incidence in urban and industrial areas. Recently, ICMR has instituted a fairly wide investigation in this respect. The result may have important bearing in the trend of our campaign.

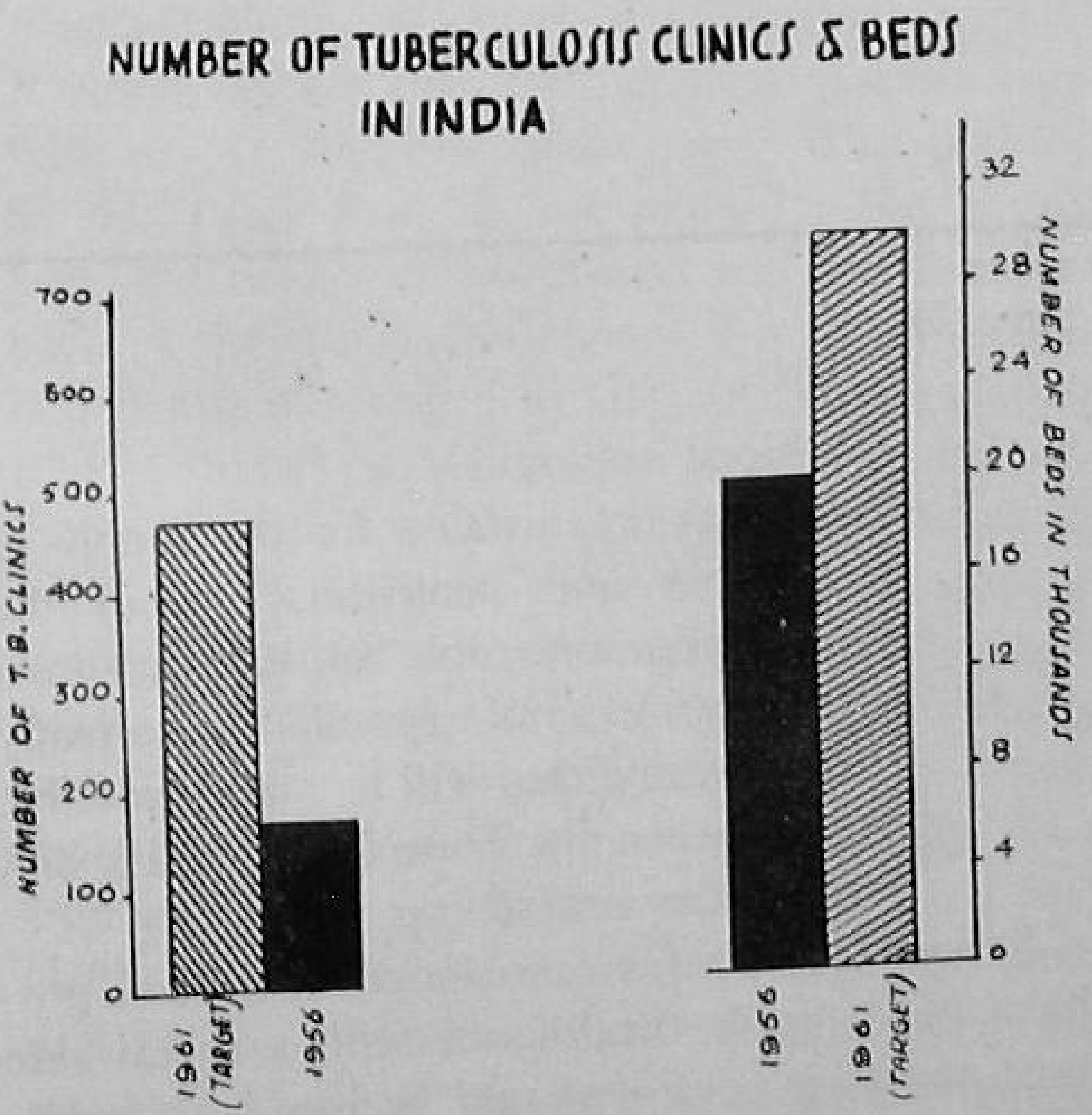
The methods of tuberculosis control are fairly well charted to-day but their adequate implementation is difficult. Any contribution towards a simpler and cheaper diagnostic method; a quicker, cheaper and more effective treatment; or a better and cheaper method for protection will definitely change the trend of anti-tuberculosis campaign.

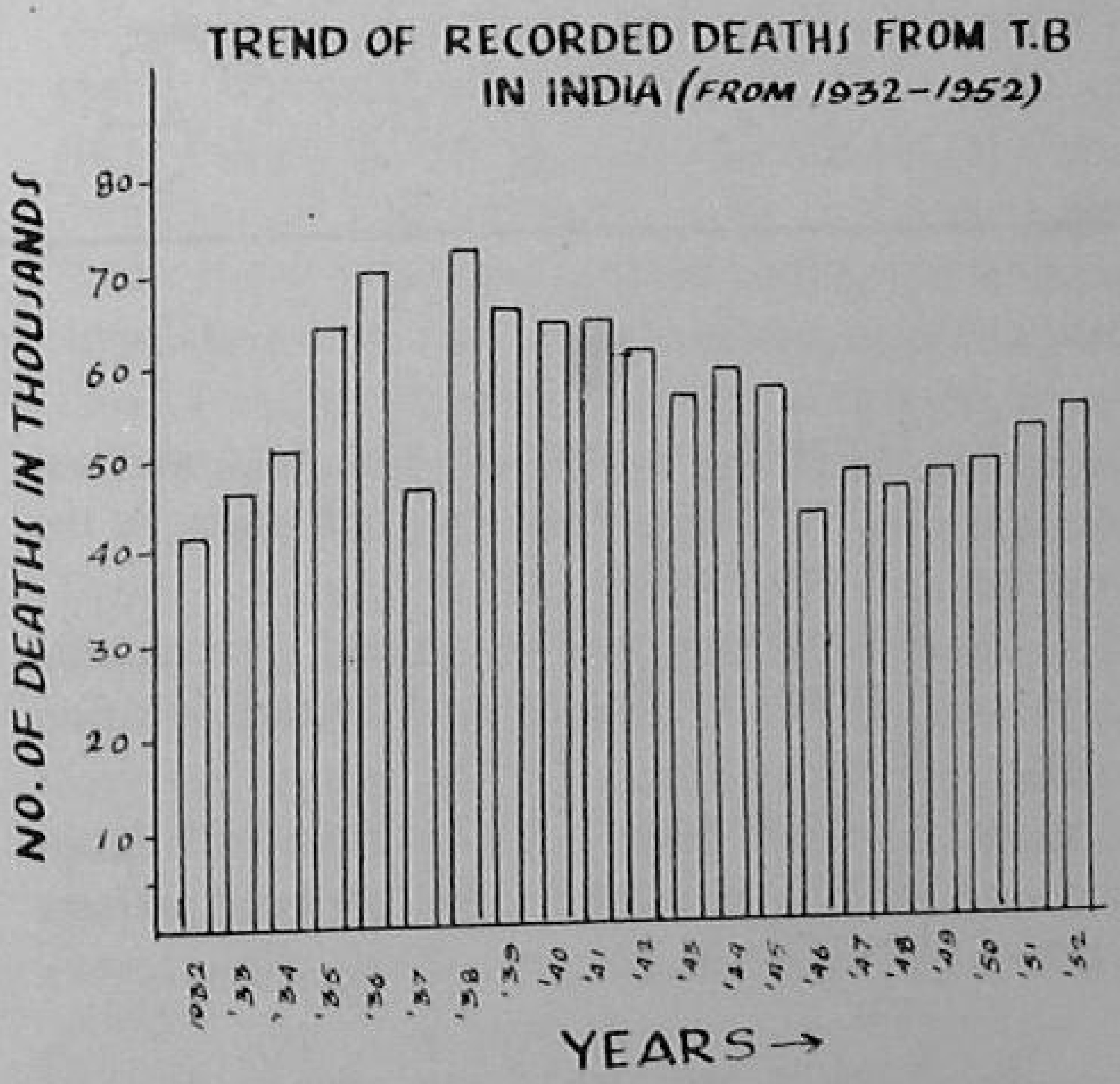
SOME FEATURES OF TUBERCULOSIS

IN PICTURES

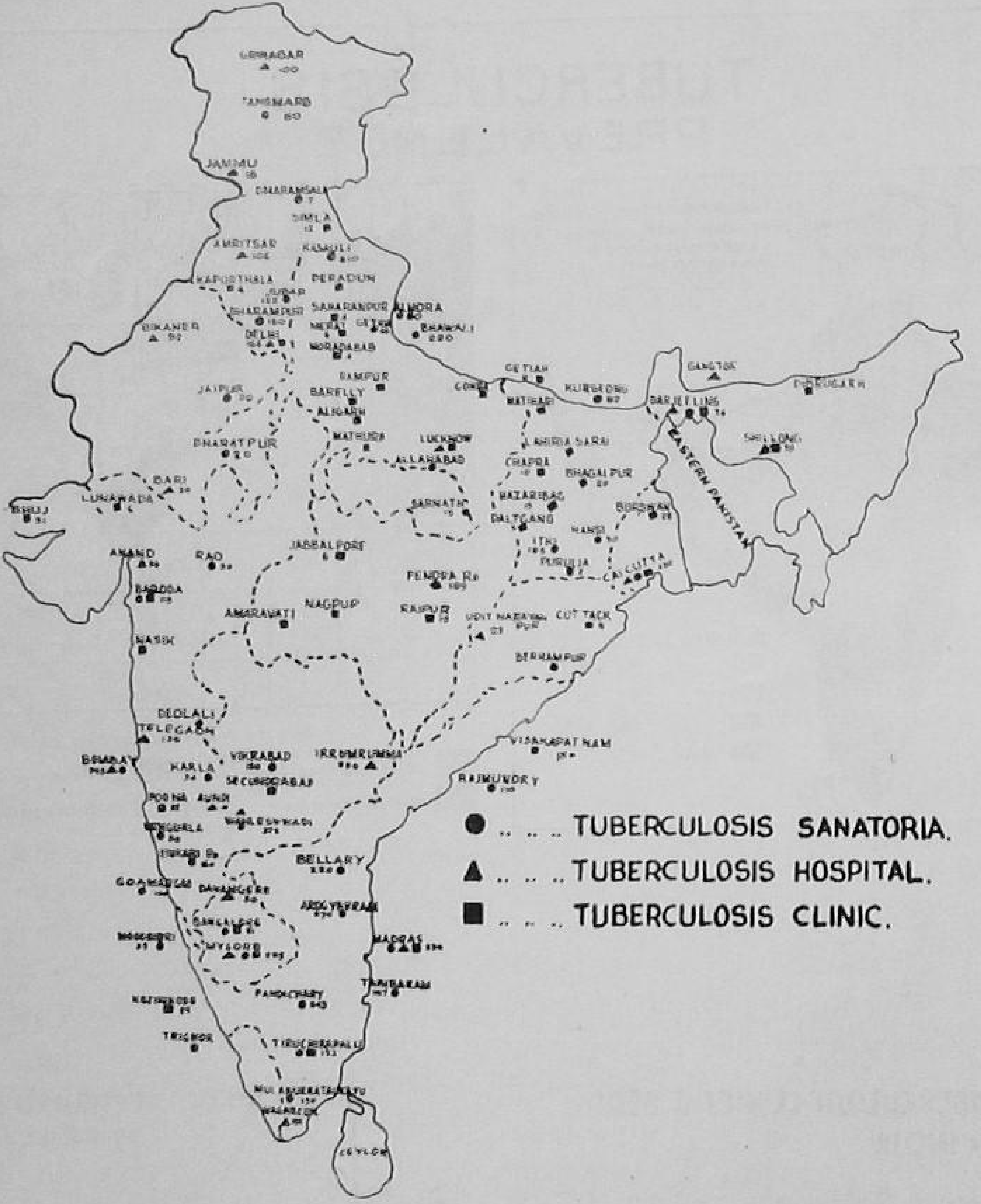
Editor







TUBERCULOSIS INSTITUTIONS & BEDS IN INDIA



(Contd. from page 73)

3. Training of medical and para-medical personnel recruited by each state at the training centres.
4. Preparation of educational propaganda material by Central and State Education Boards
5. Establishment of V.D. clinics with laboratory facilities in district headquarters hospitals at the rate of 50 clinics every year
6. Routine serological screening and treatment of pregnant women attending the ante-natal clinics of the district and taluk headquarters with laboratory facilities for blood testing
7. A central organisation for the supply of cardiolipin and penicillin, two of the most important tools in the diagnosis and treatment of syphilis is already underway and they will be made available as and when the State V.D. clinics and laboratories are set up.

Venereal diseases are no longer a clinical problem but a public health one with a social side to it and their control should be based on public health principles and techniques, along with measures for the mitigation of the social factors which are inseparable from these diseases.

Venereal Disease in India

R. V. Rajam

Although we have no accurate statistical data on the morbidity and mortality of venereal diseases in our country, there is sufficient information available that these diseases, particularly syphilis, have a community wide prevalence among the urban population of cities, sea-ports and industrial areas. With the inevitable shifting of population from the rural to urban and industrial areas, consequent to an increased tempo of industrialisation envisaged in the second Five Year Plan, the necessity for control of venereal diseases will assume a greater urgency. Among the group of veneral diseases, syphilis constitutes a major health hazard to the individual and the community. It is computed that the percentage of positive reactors to syphilis in surveys conducted at Madras and Calcutta among apparently healthy people, expectant mothers and blood donors varies from 5 to 8% which means 5,000 to 8,000 per 100,000 of the adult population are victims of syphilis. If hospital statistics are any indication of the relative proportion of infectious to non-infectious syphilis it would appear that 75% of these positive reactors are in the infectious stage. The problem in the rural areas is not defined. But in the hills and valleys of North-west and North-eastern parts of the Himalayan regions it is stated syphilis is endemic affecting 5 to 10% of the population. Recent studies at Madras have revealed the existence of non-venereal syphilis among the childhood and juvenile population living in the innumerable slums and pavements of the city under conditions of squalor, lack of hygiene and debased sexual standards. What is true of Madras slums must also be true of slums in other big cities with a growing population.

The mortality and morbidity of infants born of syphilitic mothers are disturbingly high.7 out of 10 children born to untreated syphilitic mothers are either dead born or diseased. Syphilis is one of the blinding diseases both in children and adults. The late effects on the cardiovascular and central nervous systems are well-known. The economic burden of venereal disease on the community and the state living on a subsistence level must be considerable.

The facilities for the diagnosis and treatment of syphilis and other venereal diseases are inadequate both in quantity and quality. The concept of control of venereal diseases is non-existent. Penicillin is not the only answer to the control of venereal diseases. The treatment clinics which are operating in many of the hospitals are like the revolving doors of department stores in the West. An enormous clinic load gets in and gets out and no further notice is taken. There is almost a complete lack of epidemiological investigation, patient education and case-finding activities.

In no other communicable disease do we have such effective tools for rapid diagnosis and certain cure as in syphilis and other venereal diseases. Venereal diseases should be fought on these integrated fronts, the educational, the epidemiological and the therapeutic. Of course law enforcement measures against bootlegged sex and social measures for the rehabilitation of the victims of the traffic would also be necessary in any organised central scheme against venereal diseases.

It is a matter of gratification to note that the Union Ministry of Health in collaboration with the Health Panel of the Planning Commission had proposed a comprehensive 'National Plan' for the control of V.D. as part of the central health schemes of the second Five Year Plan.

The proposals comprise—

1. Formation of Central and State V.D. control organisations
2. Establishment of four training centres at Delhi, Calcutta, Madras and Bombay with attached Reference Laboratories

(Contd. on page 72)

* Dr. R. V. Rajam, M.S., F.R.C.P., Director and Professor of Venereal Diseases, Institute of Venereology, Government General Hospital, Madras.

Filariasis Problems in India

By Dr. P. Sen, Calcutta.

Filarial diseases appear to be prevalent in at least 10 States of India, viz., Assam, West Bengal, Bihar, Orissa, Madhya Pradesh, Hyderabad, Madras, Travancore, Bombay and Saurastra. Uttar Pradesh is also believed to be affected. The disease is not usually present in high altitudes, although recently this has been reported from areas above 6,000 ft. in Nepal.

In India two distinct parasites, *Wuchereria bancrofti* and *W. malayi* are responsible for the disease. Of these two, *bancrofti* appears to be the predominating from, being present in all the States mentioned above, and perhaps beyond, whereas *malayi* is prevalent mostly in Orissa in eastern India, Madhya Pradesh and Hyderabad in Central India, and in Travancore in South India. Recently Assam and West Bengal have also shown the existence of the latter species as well. *W. malayi,* therefore, is not so rare in India, as it used to be some years ago.

Our knowledge of the vector is also much advanced and although *Culex fatigans* still remains the chief mosquito concerned in the transmission of bancroftian filariasis, *malayi* is spread not only by *Mansonioides,* as commonly known, but recent findings show that this can be transmitted by *Anopheles hyrcanus nigerrimus* as well in West Bengal where *Mansoniodes* plays a minor role in this respect. *A. philippinensis* has also been known to transmit bancroftian filariasis in nature in parts of Bengal throwing evidence that certain anophelines may also be involved in the spread of filariasis in this country in addition to Culicines.

Bancroftian filariasis is particularly common in urban areas which provide excellent breeding facility to *Culex fatigans,* the vector concerned, in the special nature of water carriage and storage system prevailing in such environments. The malayian infection, on the other hand, is primarily restricted to the rural areas with ample *Pisitia*-infested tanks to breed *Mansonioides,* the favoured vector of the infection. The transmission goes on all the year round.

The chief clinical manifestations of the disease are lymphaedema or elephantiasis of the limbs, genitalia and breast, and less noticeably lymphangitis, lymphadenitis and hydrocoele. Chyluria is also another symptom of wucheriasis in many areas.

Treatment of the disease in advanced cases, particularly in elephantoid stages is difficult, as nothing but surgical operations are found effective and that too not very satisfactorily. In early and acute cases, the *hetrazan* treatment has proved effective to stop further progress of the disease by killing the microfilariae in peripheral circulation. This drug has been effective in eradicating microfilariae in doses of 100 mg, thrice daily after meals, per adult for 5 days, reducing the dose proportionately in the children or in persons with delicate constitution. The dose of course may be varied from 0.5 mg to 2 mg per kg of body weight, extending or shortening the period of treatment from 3 to 21 days or even a month.

The advantage claimed in hetrazan treatment is the complete disappearance of microfilariae in the blood on the 2nd or 3rd day after the initial dose—thus completely intercepting the mosquito transmission of the parasites. The treatment however is not without untoward reactions in a proportion of individuals, particularly in *malayi* infection.

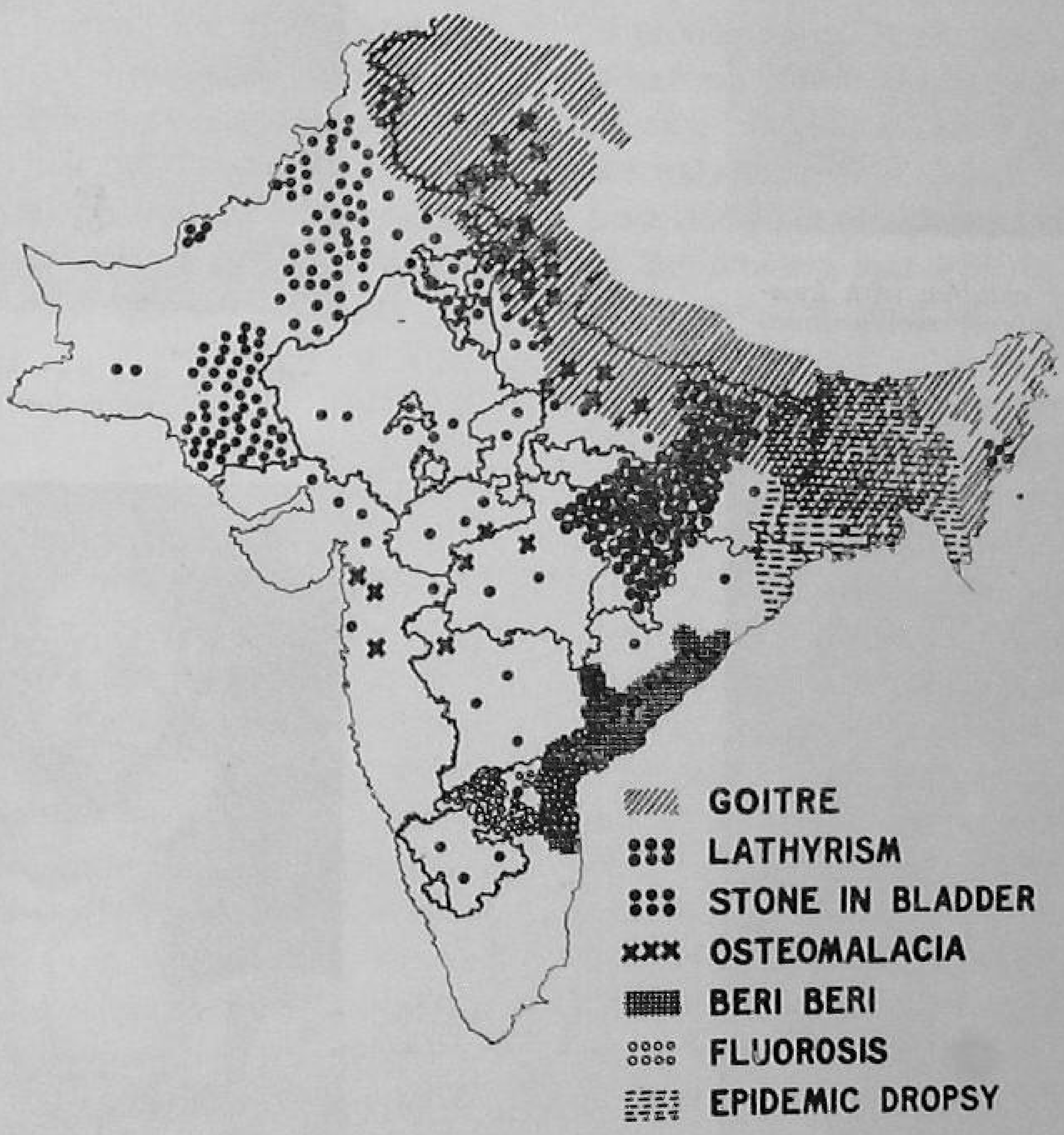
Measures recommended in controlling filariasis have been threefold: (1) anti-larval and drainage to cut down the breeding of the vector, particularly of *Culex fatigans* in urban areas, (2) anti-mosquito, by room sprays with insecticides like dieldrin, DDT etc. to prevent mosquitoes getting infective, and (3) hetrazan therapy as a means of mass prophylaxis in rendering people immune from infecting mosquitoes.

The Government of India through the State Governments have already in hand 13 control units under National Filaria Control Programme distributed over the various States. It has been now planned to take up a more intensive programme by covering as large a population among the 25 million people estimated to be at risk in the country. The Second Five Year Plan provides a sum of rupees nine crores for this purpose, and besides the 13 units already operating 65 additional Units are proposed to be set up.

THE PROBLEM OF NUTRITION IN INDIA

By Dr. V. N. Patwardhan,
Director, Nutrition Research Laboratories ICMR,
Coonoor, S. India.

NUTRITIONAL DISEASES IN INDIA.

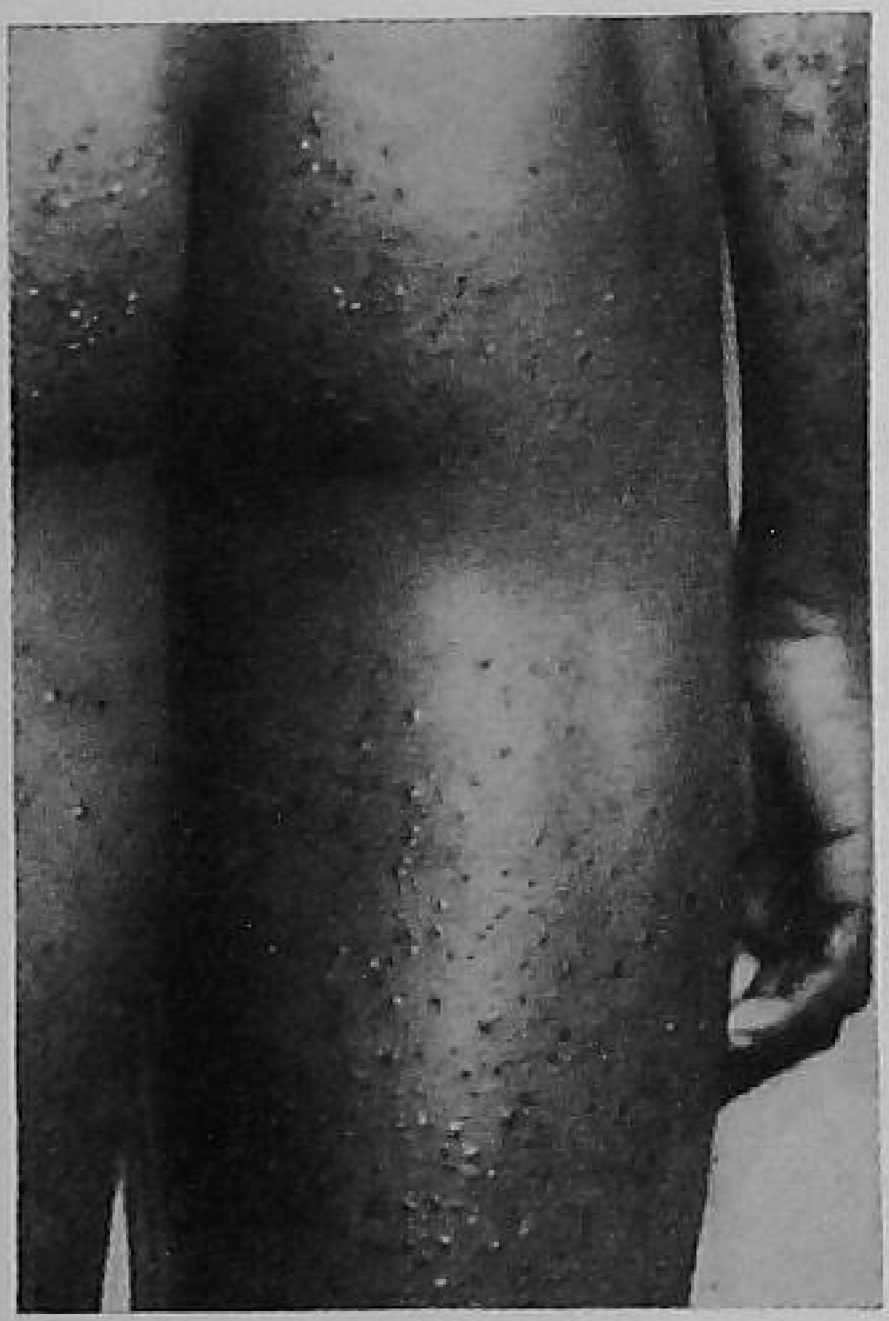


Specific nutritional and dietary diseases occur over large areas in the country as is shown in the accompanying map. Most of these diseases can be controlled chiefly by Government action whereas others can be dealt with by a change in dietary habits. Endemic goitre in the sub-Himalayan regions can be eradicated by ensuring that all salt consumed in the endemic area is fortified to appropriate levels with iodide or iodate whichever is found suitable. Beri beri has been known to occur in Andhra and some parts of Orissa for over a hundred years. It was the second world war which, with its attendant scarcity of rice, led to the introduction of some changes in the dietary habits of the people with the result that beri beri incidence in these parts seems to have decreased in recent years.

Lathyrism is associated with the consumption of large amounts of Khesari dal (*Lathyrus sativus*) in the daily diet. Although its aetiology is not fully known it should be possible to control the disease by discouraging the cultivation of this pulse or if that were not possible, by advocating its use in admixture with cereals or other pulses. Epidemic dropsy is another example of a disease associated with diets. Its outbreaks can be pre-

vented by the effective enforcement of food laws, for it has been established that the consumption of musatrd oil adulterated with that of *Argemone*

A group of children with kwashierker (protein malnutrition).

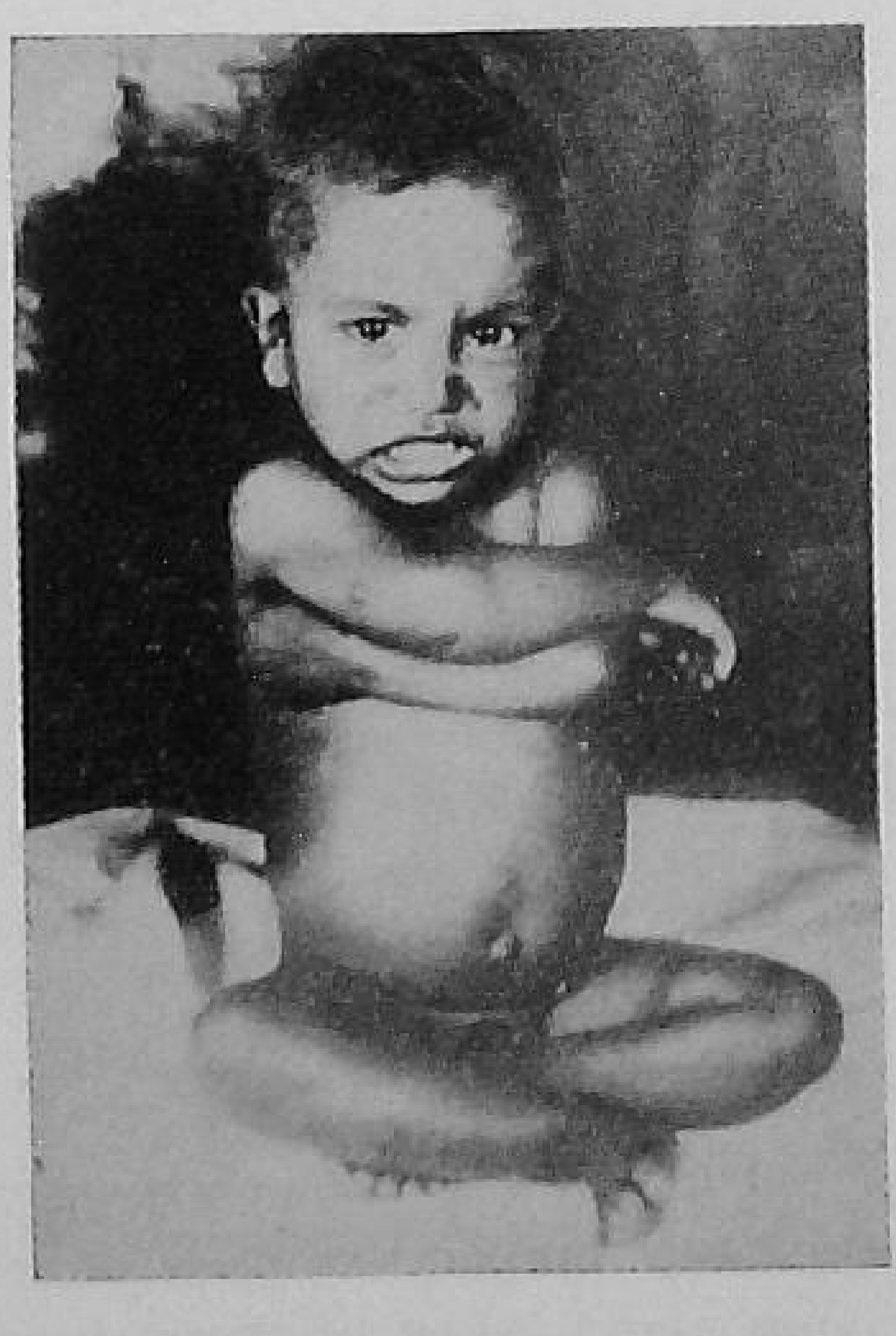


A case of phrynoderma.

mexicana seed is responsible for epidemic dropsy. Fluorosis which is endemic in Andhra and Hyderabad is waiting to be tackled, the only possible method of doing which is to make available in rural and semiurban areas protected water supply containing less than 1 p.p.m. of fluorides.

The peculiar incidence of urinary calculi in India makes one think of its possible association with wheat and millet diets. Intensive research is needed, however, before its aetiology is elucidated making it possible to take preventive measures. Osteomalacia (and possible rickets also) occurs more commonly in the north of India than in other parts of the country. Overcrowding in the cities and the peculiar custom of purdah observed by certain communities in addition to

A child with kwashierker on admission.



The same child after treatment with skim milk diet.

the poor quality of the diets are probably the principal causes of its occurrence.

Apart from the diseases mentioned above, there are others for which malnutrition in varying degrees is responsible. Anaemias, chronic non-specific diarrhoeas and some skin conditions are examples of this category. Furthermore, the wide prevalence of low grade malnutrition pro-

bably is responsible for the high susceptibility to infectious diseases.

The problem of nutrition in India is thus vast in its scope and hence a major public health problem. Whereas specific diseases can be controlled comparatively easily it is more difficult to tackle general malnutrition for it is more widespread than is appreciated. It begins in infancy and childhood and the conditions of poverty, illiteracy and ignorance being what they are, continue to operate where the majority of Indian people are concerned. The best example is found in the wide occurrence of protein malnutrition in infants and children in this country. In a few large cities of South India where enquiries have been made, it was found that 10 to 16 per cent of admissions in the pediatric wards were for this conditions. Field surveys have indicated its wide-spread prevalence in the infants and children of the lower socio-economic groups in both the rural and urban areas. Unsatisfactory weaning practices and lack of suitable supplementary foods in later stages of infancy and early childhood appear to be the important causes. Further, a majority of cases of preventable blindness is due to vitamin A deficiency to which young children fall easy victims. The school children also show evidence of malnutrition. Deficiency states attributable to one or more nutrients are found among 5 to 15 per cent of the children of school going age.

All these facts must convince one of the immensity of the problems and the necessity of tackling it urgently. No one approach is likely to prove successful. Improvement in the standard of living, increased production and consumption of protective foods, spread of literacy and educattion, better organisation for the care of mother and the child are some of the various fronts on which action will have to be taken to offer any hope of relief. Let us hope that not only the public health workers but that the State and Central Governments as well are aware of the problem and will do whatever is needed to improve the nutritional status of the people.

Role of Iodine in Endemic Goitre

By Dr. K. Mitra, New Delhi

About a hundred years ago a French scientist, Chatin, suggested for the first time that goitre is caused by deficiency of iodine in the environment, air, water and soil. The implication of this observation was not appreciated until 50 years had elapsed. To David Marine goes the credit of preaching forcefully that endemic goitre is a disease which could easily and effectively be prevented. Very soon after this preaching the original experiment lasting for a period of about four years from 1916 to 1920 for prevention of goitre in man was planned in Ohio, U.S.A. Five thousand girls volunteered to drink for a period of 10 days at a stretch once during the spring and again in autumn water containing three grains of sodium iodide daily. An equal number of girls agreed to subject themselves as controls by not drinking iodinated water. The girls were all in their adolescent stage at which period the incidence of goitre is recorded at its highest. The results of the experiment conclusively proved the efficacy of iodine as a prophylactic against goitre and it soon attracted the attention of other countries leading to further clinical trials and iodine prohylaxis notably in Switzerland. Within a couple of years of this experiment Dr. Kimball was invited to investigate into the rather unusual prevalence of goitre in West Virginia. The investigation revealed that endemic goitre had become prevalent in that State since the changing over from consumption of a coarse, brownish table salt to a rather purified one and that the original crude salt contained approximately of 0.91% of iodine. The concept of iodization of table salt in preference to iodization of water supply may be attributed to this classical investigation. Other States were quick to follow the lead. In Switzerland the consumption of iodized salt was introduced in 1922 and by 1950 all but one of the cantons had followed this example. Much to the discomfiture of the defaulting canton it was noticed that it had recorded the highest figures for discharge from the army due to goitre alone.

In India no *ad hoc* survey of the incidence of goitre has so far been carried out. About 40 years ago McCarrison, after some enquiry, had estimated that about five million people in India suffered from endemic goitre. Few recorded scientific figures are available, but the medical and public health officers who have worked in the affected regions or are interested in the problem are of the opinion that goitre is prevalent all along the slopes and foot hills of the Himalayas beginning from Kashmir in the west to the North Eastern Frontier Agency tract and extending even perhaps to Manipur.*

The number of cases of goitre treated in the hospitals and dispensaries in the Punjab, Uttar Pradesh and West Bengal during the recent years is given below:

The figures should not be literally interpreted. Figures from Bihar, which cover an appreciable quota of the goitre belt, (about 25,000) are available upto the year 1948 and are not, therefore, included in the table. Quite an appreciable number of goitre cases is seen outside the Himalayan belt, notably in Madras. Their aetiology is not known. It has a low incidence in Western and Central India. The few sporadic surveys of limited type that have been carried out recently in Kashmir, Uttar Pradesh and Bihar record an incidence varying between 26% to 90%. As a prophylactic measure some of the State Governments, as for example, Punjab and Uttar Pradesh sell iodized salt in limited and selected goitrous regions. The response from the public though not discouraging cannot be said to be very enthusiastic. This salt is distributed in limited areas covering barely a population of one lakh, yet whatever salt is prepared is sold out. About 700 lakh maunds of salt is consumed every year in India and the whole of it is produced from indigenous sources. About eighty per cent of the supplies is obtained from sea salt and the remainder is obtained from inland salt lakes or wells at Sambhar, Kharaghoda and Dharangdhra. The salt obtained

from inland is inferior to that obtained from sea and the sodium chloride content in bulk of marine salt varies between 92 to 96 per cent. Only about 14 to 15 per cent of our total salt supply can claim a fair degree of purity with a sodium chloride content of 98 per cent. The Salt Expert Committee of the Government of India are trying their best to improve the quality of Indian salt which is not of a very high standard. Experimental evidence carried out within the recent years indicates that in the type of salt India produces much of the iodine will dissipate, lose much of iodine owing to the impurities and the moisture present. Presence of moisture induces a movement of iodine released from iodine inside the salt mass and it may dissipate either in the atmosphere or in the cardboard or fabric of the container. Experiments have, therefore, been carried out on the possibility of the use of alkali iodates as the fortyfying agents. The pharmacological action, the therapeutic use and toxicity of these have been studied within the recent years, firstly in experimental animals, then in limited number of human subjects and finally amongst groups of people. The iodates have been exonerated from toxicity factor cadse by long term use. It has also been experimentally confirmed that iodine in iodates is available in human subjects. In India, therefore, the use of iodates is advocated. The best method would be to iodize all the salt used in goitrous region before it is put up for sale in the market.

CANCER PROBLEM IN INDIA

DR. SUBODH MITRA, *Calcutta*
and
DR. DAKSHINA MUIRTY, VISAKHAPATNAM

Introductory :

In several western countries, like U.K., and U.S.A. cancer is to-day the No. 2 killer of mankind, next only to heart disease. In India, however, although cancer problem to-day is not so dramatic in its ranks of mortality or morbidity, like malaria and filaria, tuberculosis, leprosy and it merits at least the drawing up a national plan V.D. The cancer problem in India differs only in degree, primarily due to the lower mean age of the population. With the industrialization *vis-a-vis* rapid urbanisation in the Second Five Year Plan, with emphasis on large and small-scale industries, it would appear that by the end of the plan period, cancer may take a much larger toll of mankind in India. It would appear prudent for us therefore, to benefit by the researches and plans of western countries, right from now, to avoid similar situations arising, when we change from an agricultural to an industrial economy with consequent changed patterns in distribution of our rural-cum-urban populations.

To draw up a national plan for cancer in India, we should gather all facts and figures which are relevant to the epidemiology of cancer, and in its absence at least make estimates of its numbers in mortality and morbidity. We should aim at an understanding of the various factors, such as racial and familial factors, age and sex incidence, distribution by types and sites of election in the susceptpible hosts.

Incidence, prevalence and mortality rates (vide diagram) :

(1) *Mortality and Morbidity in U.S.A.:*

Leavell & Clerk have estimated that nearly two lakhs (200,000) died of cancer in U.S.A., every year as against the 'prevalence rate' at 465 per 100,000 and 'incidence rate' at 349 per 100,000. These reflected on its population of about 170 millions work out at about 6 lakhs prevalence and 6 lakhs incidence respectively. It also seems reasonable to assume that over 2 lakhs people are walking in the streets with early *undiagnosed cancer*—a figure roughly equal to the cancer deaths each year.

(2) *Mortality and morbidity in India :*

According to the Bhore Committee, 1948 the relative incidence of cancer in India is probably as high as in the western countries of the age at which the cancer launches it attack is considered.

(a) *Mortality.*—In the absence of accurate statistical data the mortality rate of cancer in India can be estimated from the autopsy rate. Rogers, Viswanath and Greval, Khanolkar and Subodh Mitra have from time to time, analysed the autopsy rates of cancer during the past 25 years in various city hospitals in India, and from these it is assumed that 3% is a near enough rate of cancer deaths to total deaths in hospitals. Accordingly the total cancer deaths work out approximately at 2 lakhs. It would therefore appear that the total estimated annual deaths of cancer in India and the actual deaths in U.S.A., will approximately be the same, but the population being double that of U.S.A., the risk rate is only half and this tallies with the expectation of life in India.

(b) *Morbidity :*—In the absence of any surveys in India on the lines conducted by the U.S. Public Health Services, it is felt that an estimate of the sickness figures in India, may be obtained from a comparison of the number of cases at various levels in the U.S.A., already discussed above (vide Chart I). It is therefore, presumed that corresponding to 2 lakhs deaths, an equal number will lie *undiagnosed*, and another 2 lakhs are in the advanced Metastatics stage. In addition, each year approximately 2 lakhs shift from one stage to another, from 'processed host' to "cancer-in-

situ" and 'metastatic cases' ending finally in death this makes a total of 8 lakhs.

Natural History of Cancer :

In this note, cancer is meant to include all malingnant nea-plasms which run a progressive course by different stages as outlined below which may give us an idea of the strategic attackss to be made at each stage for prevention. These are depicted in the chart.

(a) *The processed Host :*—The genetically condition host, with familial predisposition towards cancer, when subjected to carcinagens in his environmental factors exciting his inherent characters, will produce cancer in hos cells. From a preventive view point, such persons should be made cancer-minded, to go over to cancer-conscious doctors in cancer clinics for periodical checkups. Thus, women are being told in western countries, to make periodical self-examination of accessable paprts of the body like the breast, lips and cheeks or skin and on the discovery of any thing suspicious (growth) to consult cancer clinics for screening. It would therefore, be the first stage in planning cancer prevention to start such clinics and/or educate the public to become cancer minded or cancer conscious in early stages.

(b) *Cancer-in-situ :* Cancer host cells having been stimulated to activity, become so altered as to attract certain isotopes of tracer elements, even before they produce massive tumours which become opaque to x-rays or palpable to the patient or doctor. Such stage is amenable to early operative methods or treatment by deep x-rays or radium therapy. In some cases it may be a benign tumour like a papilloma which may take over cancerous activity and, may be easily spotted at this stage.

(c) *Regional/Metastatics/and Overt Cancer :* From localised cancer we may pass on to these stages gradually, where the lymphatic system draining the area included in the localised cancer may get involved, and later metastatic or Overt cancer ends in death. It is known that 50% of the number of the cases of cancer come under this group in western countries at the time of first diagnosis or treatment, while in our country it may be estimated that 75 per cent. of all such cases come under this group. All such cases can be said to have lease of only one year life, and hence this late group will shift over to mortality every year.

National Programme for Cancer :

Viswanath and Greval as the result of extended study of biopsy and autopsy material came to the conclusion that "the factor of irritation seems to sexcel all other possible causes and brings the problem of this disease within the scope of preventive medicine. From a comparison of the statistics available in western countries and supplying them to Indian conditions as estimate of volume of cases at different levels of cancer prevention has already been made. Leavell has estimated that in U.S.A. if all the available knowledge of cancer is implemented, it is perhaps possible to save $\frac{1}{3}$ to $\frac{1}{2}$ of the early cancer cases and, prolong the life of the late cases by 5 to 10 years. The National Campaign against cancer should consist of the following programmes:

(i) *Cancer clinics and dispensaries :*—Every State and teaching hospiptal and later every district hospital, should organise a cancer clinic-cum-dispensary which functions inter-alia for collection of facts and figures, stimulates interest and educates the public to become cancer-minded and doctors to become cancer-conscious, and examines patients coming to these clinics, at all stages who may be sorted out into various preventive levels, the object being to cut the progress of cancer cases at various barriers. In every state or district of India the volume of cases available in each group may be roughly estimated on the lines drawn up for the whole country, taking all carcinogenic factors of the local population, who are subjected to such hazards, in addition to individual familial and racial characters, and the funds nd organisation available to cope with all such cases.

(ii) *Research and Surveys:*—Apart from laboratory and clinical diagnosis, epidemiological research in cancer instituted in each locality, will lead to better localisation of the processed hosts, the environmental carcinogenic factors and the individual factors including irritation causes proneness to cancer. Field surveys and laboratory screening when correlated, will help to establish the extent and nature of problem, as well as the volume of cases at each of the preventive barriers to launch strategic attacks with tactical details.

It is hoped that this note will create interest in the Public Health authorities, Planning Commission and the Indian Public Health Association to form a sector of Public Health Activities to attack this pproblem at a very early date, in the Second Five Year Plan period.

CANCER

MORTALITY AND MORBIDITY ESTIMATES IN U.S.A. & INDIA

	U.S.A.	INDIA	NATURAL HISTORY—EPIDEMIOLOGICAL GROUPS		
TOTAL POPULATION ...	170 millions	340 millions	*Human Host*	*Agent*	*Environmental Factors*
NEW CANCER CASES EACH YEAR ... (U.S. incidence rate: 369/100,000).	6 lacs	6 lacs (?)	Familial Factors Racial Factors Unknown Factors	Carcinogens Interacting to provide	Occupation, etc.
CANCER CASES AT ANY ONE TIME ... 8 lacs (U.S. pre-alence rate: 465/100,000).	2 lacs	2 lacs	PRECANCEROUS STAGE (Benign tumors becoming malignant). CANCER-IN-SITU (Localised cancer).		
	6 lacs (?)	6 lacs (?)	REGIONAL CANCER (Limited to Lymphatic drainage zone). METASTATIC OR OVERT CANCER.		
CANCER DEATHS ...	2 lacs (?) (recorded)	2 lacs (?) (3% of total deaths—autopsy data)			

(With compliments to Dr. Hugh R. Leavell, Ford Foundation, New Delhi for Finalisation of the Chart).

Maternity & Child Welfare Programme

DR. MRS. MUKTHA SEN, Calcutta.

Introduction

Maternity and child welfare is a special service in the field of Public Health and provides health supervision to the individual from conception to the school age. Thus the primary responsibility of the service is the care of the child. But as the child cannot be reached directly when he is in the womb, an indirect approach is made through the prenatal care of the mother. The intrauterine life, when he is growing and developing more rapidly than he would be doing in any other period of his life, health protection is most essential for normal and optimum growth. Therefore maternal health is an essential part of the child health service and is its beginning. For promotion of health which is the main object of the present health program, M. & C. W. contributes to a great deal.

Maternity and Child Welfare Service in India:

In India the service of M. & C. W. started nearly half a century ago with emphasis on maternal health. In Western countries the stress from the beginning was on child health. It was the unskilled assistance at the time of delivery, and want of medical aid for emergency care, that was contributing greatly towards the death and morbidity in mothers and children. Therefore, in order to tackle these problems a beginning was made in the form of training of dais who were the delivery agents, and the establishment of women's hospitals by the Dufferin Fund. Soon the need for trained technical personnel to organise M. & C. W. centres and supervise the dais was found necessary. This was met by starting Health Schools for training of Health Visitors and encouraging the training of Midwives and special Doctors. The foresight of these pioneers who prepared these personnel, greatly helped the advancement of the service for mothers and children in later years. But, because of the enormous problems that had to be tackled, and the limited resources available, restricted the program more to the field of material health. Limited attention was paid to the needs of the children. Another reason was that all the effort was from voluntary and private organisations. Now the government has accepted the major responsibility not only to further the cause of mothers and children, but also to bring the child care in par with the maternal care, so that it can be a comprehensive health service to the child.

PRESENT CONCEPT OF MATERNITY & CHILD

(a) *Family health approach:*

M. & C. W. aims at giving health supervision to the individual so that he can grow up as a happy and healthy citizen, balanced in his physical, mental, emotional, social and spiritual outlook. For this the environment he lives in has to get as much attention as the individual himself. His immediate environment is the family and the home. Therefore the health of the family and the healthful condition in the home is necessary for his well-being. Thus for the care of the mother and child, it is necessary to care for the whole family.

(b) *Integrated, preventive, curative and social service:*

Integrated health service has been accepted as the need of the hour. M. & C. W. workers have been practising it from the beginning because, though it is called a preventive service, as the etiology for most important and frequent disease in the mother, like anaemia and toxaemia is still unknown, the only method of control has been through early diagnosis and treatment. But integrating M. & C. W. service with the health centre program has been beneficial as it has made emergency aid easy and institutional care

within reach. The people have also become institutional minded which has made the integration more useful and essential.

(c) *Incorporating family planning:*

At present M. & C. W. program starts health supervision after conception. But according to the current concept of preventive health service, in this type of care the appropriate time to institute preventive measures has been missed. Because some women have been allowed to become pregnant who are unfit to bear children. Therefore their health and life has been already endangered. The real method of prevention is to see that such women do not conceive. Also there are other reasons for avoiding a pregnancy, in the interest of the mother or child. In order to meet these demands of preventive medicine it is now believed that complete maternal health should include six types of services: (1) Premarital examination. (2) Pre-conceptional examination. (3) Pre-natal care. (4) Delivery service. (5) Post-natal care. (6) Advice and assistance on Family Planning and spacing of children. Thus to safeguard the interest of the coming generation three more services have been added to the M. & C. W. program. Among these the ones that would be of immediate interest to us are the pre-conceptional examination and postponement of pregnancy as circumstances and safety demand.

(d) *Mental Health:*

The mental make-up of the mother is one of the factors that guide the course of pregnancy, delivery and motherhood. Therefore proper mental preparation of the mother would help her to go through these with least strain and anxiety. It is generally done by explaining to her the physiology of pregnancy, and labour and preparing her for what is called "painless labour." M. & C. W. organisations should accept responsibility for giving her this advice also.

Second Five-Year Plan

To meet the expanding program and the broadening scope of M. & C. W. service, in the Second Five-Year Plan the following procedures are suggested:

(1) Training of more technical personnel who are essential workers in this field like Doctors, Health Visitors, Midwives etc.

(2) Integration of the preventive and curative health service has made the training of a new type of worker—the Public Health Nurse necessary. She is being trained as an undergraduate in two centres, and as postgraduate in two centres in India. The number of this type of worker should also be increased.

(3) Responsibility for skilled assistance at the time of delivery cannot be taken over completely now. The approach is to give efficient antenatal care, provide institutional care for abnormal cases and permit the dais to conduct the normal cases in the homes, especially in the rural areas. An attempt is to be made to train these dais and thus improve delivery service for normal cases also.

(4) Mental health service both to the mother and child to be broadened with health education of the mother during pregnancy, and establishment of child guidance clinics to the children.

(5) Child health to be stressed in undergraduate teaching and program for training of specialists in child health to be increased.

(6) Institutional care for the mental, social and physically handicapped children, to be established. Also children hospitals and child health centres to be more in number.

(7) Care of the school child to be an essential program in child health.

(8) Efforts to be made to appreciate the social and cultural factors that influence the health and well-being of children and mothers.

Thus before the Second Five-Year planned period is over it is expected that the Infant and Maternal mortality and morbidity would be considerably reduced, birth-rate would show a fall, most of the mothers and children would get health supervision and medical aid from technical personnel, except at the time of delivery to the normal cases in the rural areas. Also the service for the mathers would be much broader and the service for the children would be more comprehensive.

School Health Services in India

Dr. S. R. Sen Gupta, *Calcutta*

Growth and Development:

The School Health Service in India began in 1909 exactly 76 years after the French Government for the first time in Europe passed a law (1833) to make School authorities responsible for the sanitary condition of school buildings and for the health of children. While the period between 1842 and 1847 saw the introduction of the School Health Programme in some form or other in Europe (such as, France in 1842; Sweden 1868; Germany 1869; Russia 1871; Austria 1873 and Belgium 1874), the first School Medical Inspection in India was started in Baroda City in the year 1909, 4 years after New York City (1905) schools started examining children for physical defects and 3 years after Massachusetts passed a law regarding medical inspection in the public schools.

In the succeeding years, some other provinces in the country particularly Bombay, Bengal, United Provinces, Madras, Punjab and Delhi introduced some form of the School Health Programme. A close study of the activities in all these places during the last half-a-century will show that the type of service and the area covered by it varied widely from place to place. In some Provinces, the service included only provision for prophylative measures against epidemic diseases by the Sanitary Inspectors, while in others, supervisory personnel at the highest administrative level was set up without provision actual services of medical inspection of a limited number of children in a limited number of High English Schools was confined to a few big cities only. Apart from this, even the administrative policy of the service showed frequent changes at different stages of its development. In Bengal, for instance, the set up for Calcutta School of Hygiene work which was although started in the Provincial Public Health Department was at a later stage run for a number of years under the Education Department; this was again transferred to the Public Health Department. A brief account of the state of activities in some of the Provinces till Independence is given below:

Bombay:

In 1913, the Corpopration of Bombay City undertook the work of periodical medical inspection of School children, though, as an experimental measure in the beginning. But in 1921, a permanent Department of School Medical inspection was established on the recommendations of the School Committee. The total number of children covered by the service increased from a total of 16,000 gradually to over 100,000. This service only included periodical medical inspection. The correction and treatment being left to the parents or guardian no actual benefit accrued out of this procedure. However, in the year 1931, a Central School Clinic was started at the K.E.M. Hospital where facilities for rendering free treatment by experts in different branches were made available to the defective School children. Over and above this, in the year 1922, a Travelling Dental Clinic was also established.

The personnel emplpoyed for the Bombay City Scheme consisted of (i) Five School Medical Officers, both male and female, (ii) Health Visitors, (iii) School Clinic Organiser and Assistant Organiser, with the duties of (1) medical Inspection, (2) Correction of defects, (3) School sanitation, (4) Control of Communicable diseases, and (5) Health Education in the schools. Other important features of Bombay's School Health prpogramme were: (i) attention was paid to the children belonging to the primary schools; (ii) apart from the Central School Clinic attached to K.E.M. Hospital, a number of smaller school clinics were also held at Municipal dispensaries for correction of the minor defects of the children belonging to the different localities and (iii) a scheme was undertaken for supplying a free daily ration of 6 oz. of pasteurised milk to the undernourished school children as a measure of treatment of malnutrition.

Bengal :

School Health work in undivided Bengal commenced in the year 1919—when at the instance of the Government of India, sanction of the then Secretary of State for India was given to the inauguration of an administrative branch of the Bengal Public Health Department, consisting of (1) one Deputy Sanitary Commissioner, (later on designated as Assistant Director of Public Health), (2) one Medical Inspector of Schools, (3) one Medical Inspectress of Schools. The functions asigned to this section were: (a) Inspection of existing school buildings from the Sanitary point of view; (b) Drawing up general directions and instructions for the modern sanitation of school buildings and scrutinising plans of new school buildings from the sanitary aspect; (c) Organising the work of medical inspection of Indian school children in the bigger towns and recording the results systematically. Since 1928 till 1947, medical inspection was carried out mainly in Calcutta city with the help of a small unit of four part-time school medical officers and attention was paid to physical examination of a limited number of children in a selected number of Government and aided Boys' High English Schools only. There was only one School Clinic, attached to the administrative office of the School Health Division, with a Compounder and a School Nurse. An honorary Ophthalmologist and a Dental Surgeon used to attend this Clinic on part-time basis.

Apart from the city of Calcutta, School Hygiene work was not carried in any other urban areas. In the rural areas such an important health service was practically unknown—except that in some of the Districts, the Sanitary Inspectors used to undertake preventive inoculation work in times of epidemics and distribution of anti-malarial drugs to a very limited number of children and that was not also done in a systematic and routine procedure.

Uttar-Pradesh :

In Uttar Pradesh, (the then United Provinces), the School Hygiene Scheme was started in 1931; the medical staff employed for School Health activities consisted of (1) Medical Officers with Public Health qualifications, who were employed on School Health work alone, in 13 of the larger towns in the Province and (2) District and Municipal Medical Officers of Health in other parts of Province, who were expected to do this work as a part of their other duties.

As regards treatment, in each of the 13 towns having whole time School Medical Officers, a Central Clinics was established for treatment of the minor ailments of the defective scholars. The position regarding treatment was extremely poor in the rural areas.

Punjab :

In the Punjab, self-supporting schemes in some of the larger urban areas and a few smaller towns with contribution from the scholars had engaged whole time doctors for conduction of medical inspection and treatment of defective children.

Delhi :

In Delhi Province, a scheme had been existent in the Delhi city and New Delhi town under the control of the Chief Health Officer with a few Medical officers under him with provision for medical inspection and treatment for minor ailments. Part-time services of a Dental Surgeon and an Oculist were also provided by the New Delhi Municipality.

Madras :

In Madras, a set up consisting of four full-time Medical Inspectors, two Medical Inspectresses and two part-time specialists to work in School Clinics had been existing in Madras City only, but the rest of the Province had been completely deprived of any type of service.

Comments On The Past Services :

From the brief review of the history of the growth and development of the School Health Programme in different parts of India during the last half-a-century, it will be apparent that in spite of an honest desire to introduce this important service in some form or other, the average growing School child in India, like all other children, had been neglected from the points of health and nutrition. All we can say about the past services is that only a good gesture was shown in a few Provinces and that also was limited to a few larger towns only. Rural areas were completely neglected. The very conception that the "whole" child goes to School—had been lacking; obviously, lack of co-ordination between the education and health authorities, between the parents, guardians and the teachers, the nurses and the Doctors had been conspicuous everywhere. Inadequacy of the following fundamentals of this important programme was prominent, e.g. pro-

vision for assuring the child a healthful living, protection from illness, facilities for treatment and correction of defects and a practical health education programme to make he child and its parents learn and practise the essentials of personal hygiene and environmental sanitation. Measures to improve the nutritional status of the growing child by introduction of supplementary school feeding programme were practically unknown in the country because, if one may say so, the importance of the influence of adequate and balanced nutrition on the maintenance of natural resistance of the child against diseases, was not so well appreciated.

Recent Trends in the Country:

Recent trends in India since the achievement of Independence show that not only the Health authorities at the centre and state levels but also the individual educational Institutions have started to realise that in order to build a stronger nation with a sound physical and mental makeup, attention should be paid towards improving the existing School Health Programme in the country as well as wider expansion of the programme in areas where such a service had been unknown in the past. Principal field observations carried out in different parts of the country have amply demonstrated a poor state of nutrition with the consequent impairment of physical and mental growth amongst a high percentage of school children in the country; in fact, most of their defects are but corollaries to defective nutrition and poor resistance of the individual children. Even today, the standard of environmental sanitation and housing, in most of the Institutions in both urban and rural areas is extremely low; provision for pure drinking water supply in rural areas is extremely inadequate. Nevertheless, recent years have already seen the expansion of the School Health Programme to a certain extent in the rural areas in some of the States, like West Bengal and Uttar Pradesh by introduction of systematic medical check-up at the schools and treatment facilities at the Clinics of all the Government Health Centres. Instances are found where Local bodies and private Institutions in many parts of the country have started introduction of the services wihin their limited resources. Under the joint UNICEF/W.H.O. assistance programme, a Demonstration Project has been recently set up in West Bengal in order to find out the defects of the existing Programme and to devise ways and means to achieve better health service for the School children within the available resources in the country. Attempts for introduction of supplementary School Feeding Programmes by way of supply of protective food are being made through the Educational as well as Health Institutions. The Indian Council of Medical Research have strongly recommended the introduction of a uniform supplementary School Feeding Programme all over the country.

Suggestions for Future Planning:

From a survey of the course of events not only in this country but also in other parts of the World, we have ample evidence to say that without a well-planned programme, success is difficult to achieve in this particular branch of the Health Services. Therefore, before making any suggestion for working out a suitable plan we must be convinced about the essential requirements and aims and objectives of this important service. Today, it can be unhesitatingly stated that in any Organisation, entrusted with the task of assuring "health" to a School child provision should be made for: (1) measures for maintenance of adequate health protection based on systematic physical examination, correction of defects, prevention of further occurrence of preventable diseases by means of prophylactic measures and follow up work in the homes of the pupils, (2) maintenance of ideal standard of environmental sanitation, (3) arrangements for health education programme to enable the pupils and the parents to understand and practice personal hygiene, (4) physical education by routine physical exercise and recreational facilities. Last but not of least importance is the need for maintenance of adequate nutrition and sound mental health. It is of fundamental importance that school children like all children—should have a safe and hygienic environment, including adequate lighting, clean toilet facilities, good ventilation and pure drinking water. Both the children and their parents should know what good nutrition means and how to chose and utilise the right kind of food. It is needless to emphasize therefore that the above objectives cannot be achieved unless well-concerted efforts are made by the Education and Health authorities, and all ventures are likely to prove imperfect and incomplete if healthy co-ordination is not established between the teachers, parents, Doctors and the nurses. Assistance of the specially trained teachers and social workers in carrying out the systematic follow up work

through ppractical health education should be included in the programme.

One of our problems today is how to provide free sppecialist services to all disabled school children? This can be done by utilising the existing the existing facilities available in the established big hospitals in larger towns with a little re-organisation and adjustment; and in the rural areas by providing such services at district or regional basis The existing Health cards should be simplified and made uniform all over the country ppreferably printed in stiff paper according to the punch card system for easy statistical analysis of the data. Services of the Social Welfare Agencies and the Village Level Workers in the Community Project areas and those of the private medical practitioners should be enlisted wherever available. In order to find out the best possible methods to be adopted for improvement of the service in every State in accordance with the local resources, it is desirable to maintain a Field Demonstration Centre where facilities for training of personnel of all categories e.g. teachers, doctors, nurses, social workers, can be given through practical demonstration and study.

Question of establishing School Health Clinics at the already established Child Guidance and Health Clinics and hospitals in both the urban and rural areas at different levels and wherever necessary, even holding temporary field Clinics though the mobile health staff might also be considered both economic and pprofitable under the existing circumstances in this country.

P. H. 37

Environmental Hygiene

T. R. BHASKARAN *Calcutta*

Health may be defined as a state of full development of both body and mind anl freedom from disease to be able to enjoy life in all its aspects. Science of Biology tells us that the state of health of a living organism is the product of heredity and environment. The relative importance of each of these factors in shaping the life of an organism is a debatable point. But as far as the human species are concerned the history of public health during the last 100 years has amply demonstrated that environment has a dominant role to play in physical health and well-being of the individual. History had also revealed that there is no inheritance so good that it can be wasted in a bad environment and none so bad that it cannot be reclaimed, in part at least, by favourable environment. The importance of environmental hygiene in prevention of diseases and promotion of health is obvious and science of public health to-day is more and more concerned with the study of the relation of man to this environment.

Environment is the external surroundings in which we live. The ingredients of a descent human environment are many. But the important factors that are directly related to health and disease are the home, air, water, food and insect and animal vectors of diseases. The most striking results in improving public health in the western world during the last sixty years have been attained in the field of the environmental hygiene. Remarkable reduction in mortality rates in western Europe and America during this period can be traced largely to the provision of protected water supply, improvement in the methods of disposal of human excreta and other wastes from the community and the control of insect vectors of diseases. Cholera, typhoid and even dysentery have almost disappeared from these areas. Many of the insect—borne diseases such as plague, malaria, yellow fever, typhus, etc., have been successfully combated in many regions in the world. These achievements would indeed point out that with proper attention to environmental hygiene activities, the same results can be attained in our country also.

An attempt is being made in this paper to trace the history of the developments in the field of environmental hygiene in this country with a view to indicate the existing statt of aqairs. The history of environmental hygiene activities in India is closely connected with the growth of public health in the country. Following the great plague in Bombay in 1896, the need for hygienic environment has been repeatedly stressed by the Sanitary Commissioners of the Government. Some attention was given to community hygiene in jails, military stations which were directly under the Sanitary Commissioner and also in the larger towns. But no large scale programmes were undertaken on country wide basis and the control measures which were adopted then were dictated by the emergency to fight out epidemics rather than to provide healthy environment to the people. The report of the Plague Commission (1904) recommended the strengthening of public health services and creation of laboratories for medical research. As a consequence of this, medical research departments under the Central Government as well as the I.R.F.A. were established and Deputy Sanitary Commissioners and Medical Officers of Health were appointed in the provincial centres and local bodies. Funds were also provided by the Centre to the provinces for execution of public health works such as water supply and drainage.

By the Government of India Act of 1919, public health and sanitation were made provincial subjects and public health departments were established in all the major provinces. But the sanitary administration was mostly left in the hands of local bodies. By the enactment of the Government of India Act of 1935, greater measure of autonomy was given to the provinces in public health affairs. This lead to provision

of full time public health staff in urban areas and to a very limited extent in the rural areas. But the persons who were engaged in environmental sanitation work belonged to divergent categories dealing with problems in variety of capacities—medical officers, sanitary inspectors and personnel of the public works department. The total effect of all these on the progress of environmental hygiene activities in the country as a whole was indeed small as attention was directed mainly to the urban communities while about 90 per cent of the country's population lived in villages. Even the urban areas where some of these were practised, the work remained uncoordinated on account of the multifarious activities of the personnel employed in this work. It may be observed that upto this period little progress was made in environmental hygiene and the vast majority of the Indian population still continued to be exposed to the ravages of air, water and insect borne diseases with high mortality rates.

In view of the foregoing state of affairs the Government of India appointed the Health Survey and Development Committee in 1943 whose terms of reference included environmental hygiene relating to town planning, housing, water supply and sanitation. The recommendations of this committee is an important milestone in the development of environmental hygiene activities in this country. As a result of their recommendations the Government appointed, in 1946 the Environmental Hygiene Committee primarily to consider the steps to be taken to implement the recommendations of the Health Survey and Development Committee. This Committee has examined the problems in great detail and have made specific recommendations as to how the various problems of environmental hygiene could be tackled. The Committee has considered the question of men, materials and trained personnel that are necessary for implementing a satisfactory programme. This report also revealed that the problem of sanitation of a vast country like India is overwhelming in complexity and required an ambitious programme with large funds over a long period.

The advances in the Science of Bacteriology and Parasitology at the beginning of this century lead to the Golden Age of sanitation in the Western World. A review of the public health and environmental hygiene activities in India during the past half century shows that these ideas are also gaining ground here. Aetiology of many of the tropical diseases is now fairly well known and a certain amount of research has also been carried out in the medical research institutes on the preventive aspect of ill health. The report of the Health Survty and Development Committee (1946) and the Environmental Hygiene Committee (1948) have also served to rouse the people from their apathy and they are now convinced that much of sickness is preventable and most of the high mortality is quite unnecessary. The need for improvement of environmental hygient is also emphasised by the growing public demand for better house, better water, better food and better sanitation amongst the educated section of the population. The result of all these developments has been that during the last decade a movement for improved sanitation has taken firm root throughout the country.

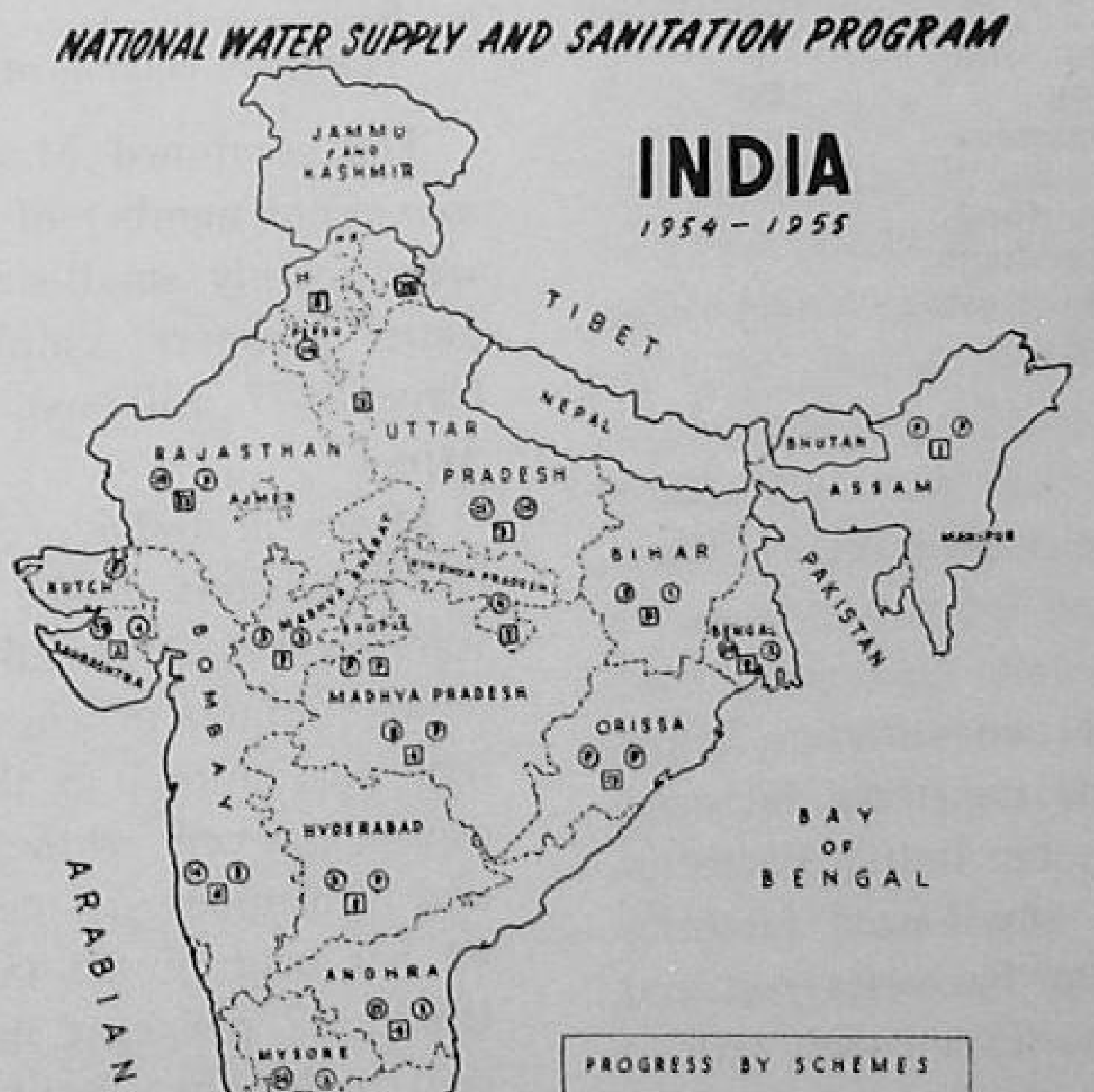
Tht Health Survey and Development Committee stressed the need for properly trained engineering personnel for carrying out environmental hygiene work in the country. The All-India Institute of Hygiene and Public Health, Calcutta, has organised in 1948 suitable courses for training engineers and engineering subordinates. Considering the overall requirements of the country, the turnover from this Institute is small and a more vigorous training programme is essential for training adequate personnel for the country. Some attention is also being given to the research needs in implementing Environmental Sanitation programmes for the country. The Indian Council of Medical Research and Council of Scientific and Industrial Research have recently constituted separate expert committees to stimulate research in these field on a country-wide basis.

The Environmental Hygiene Committee has tmphasised the urgent need for properly organised Public Health Engineering departments to carry out the programmes. Many of the States in the country have already organised separate Public Health Engineering Department to undertake this work. A Public Health Engineering division has also been created under the Central Ministry of Health to advise and co-ordinate the activities in the States, to collect and exchange technical information in Public Health Engineering and otherwise promote Environmental Hygiene activities throughout the country.

As a first step in implementing the programme of the Environmental Hygiene Committee, the Government of India has entertd into agreement with United States Technical Co-operation Mission for projects such as National Malaria Con-

trol Programme and the National Water Supply and Sanitation Programme with a view to eradicate malaria and bring about reduction in water and filth borne diseases. These projects progressed considerably during their short existenct under the First Five-Year Plan and a much larger programme is now to be launched under the Second Five-Year Plan.

In meeting the demand for improved environmental sanitation India presents many problems which require careful study for their proper solution. The rural areas which are the backbone of the country present very complex problems which require much attention. The methods for the provision of safe water supply and proper methods for disposal of human and other wastes have yet to be evolved to suit the different local conditions in this vast country. Specially trained staff and experts will also be required to design and execute public health works—water supply, drainage and waste disposal and maintain them in satisfactory conditions. All these constitute a great challenge for the future development of environmental hygiene activities in the country. The readiness with which the Government and the people face these problems will determine the course of future progress in Environmental Hygiene in this country.



Industrial Health in India

M. N. Rao
Calcutta

i. Industrial Statistics

Out of a total population of 356.6 millions in India (1951), 29.3 per cent are self-supporting (male : female : : 83.5 : 16.5). Amongst the self-supporting persons, 68 per cent are agriculturists (male : female : : 82.4 : 17.6) and 32 per cent non-agriculturists (male : female : : 86 : 14). The following table gives details of twelve millions engaged in the more important non-agricultural occupations:

Economic classification	No. of employees (Lakhs)
1. Commerce	59.0
2. Primary industries other than cultivation, mining and quarrying ...	24.0
3. Transport, storage and communication	19.0
4. Processing and manufacture foodstuffs,, textiles, leather and products thereof	12.4
5. Mining and quarrying ...	5.7
	120.1

For brevity only the more important of these are discussed below.

Factories

Factories in India are of two varieties, registered and unregistered. The registered factories are those that are covered by the Indian Factories Act (Art. 2 of 1948). All small-sized factories which are not covered by the Factories Act and which are not declared factories through special gazette notifications in individual states are unregistered factories which are beyond the jurisdiction of health legislation.

In 1951 are reported 35,013 registered factories all over India employing on an average 2.914 million workers daily. Amongst the 2.9 million workers, women are 0.28 millions (9.6 per cent), adolescents (0.8 per cent) and children (o.23 per cent). The average factory thus employed in 1951 83.2 workers. Actually, however, the very small-sized factory is the most popular in India. Nearly 60 per cent of the factories in India employ around 80 workers or less in each but these factories employ only around 10 per cent of the total labour force in India. The principal industries where these nearly three million workers are distributed are as follows:

Industry	Average daily number of workers employed (in millions)
1. Textiles	1.14
2. Food except beaverages ...	0.42
3. Tobacco	0.15
4. Chemicals and chemical products	0.09
5. Non-metallic mineral products	0.14
6. Basic metal industries ...	0.10
7. Transport equipment ...	0.20

The combined Madras State in 1951 had the maximum number of factories—11,700—but they were mainly small-sized; the combined Bombay State, however, employs the maximum labour force (0.77 millions).

Mines

Mines in India are administered according to the provisions of the Indian Mines Act. There were in 1951 more than 2,000 mines employing 549048 miners of whom nearly 20% were women. The coal mining is the most important employing 64 per cent of them. Manganese, mica, gold and iron mines are the next in order. More than 45 per cent of the labour force is employed in Bihar, 17 per cent in West Bengal and 14 per cent in Madhya Pradesh.

Plantations

The tea, coffee and rubber plantations in India employ about 1.2 millions of workers, tea alone contributing more than 83 per cent of employment.

ii. Health Statistics

Sickness morbidity and mortality amongst industrial workers is known to be significantly more than the civilian population as shown by foreign statistics. But authoritative statistics are not available in India either for the general

population or for any specified occupational group in India. The sickness absenteeism statistics and occupational health statistics are very meagre.

Accidents

Reportability of accidents is required by law. All accidents resulting in 48 hours of absence or more from work are expected to be reported to specified governmental agencies like factory inspectorates of individual states, or the mines inspectorates under the Union Labour Ministry. The following are the trends in accidents collected by official agencies:

ACCIDENTS IN FACTORIES 1947-51
(Rate per 1000 workers employed)

Year	Fatal accidents	Non-fatal accidents	Total accidents
1947	0.09	25.74	25.84
1948	0.11	28.73	28.84
1949	0.10	30.96	31.06
1950	0.10	29.11	29.21
1951	0.09	29.84	29.93

ACCIDENTS IN MINES, 1947-51
(Rate per 1000 workers)

Year	Fatal	Serious
1947	0.65	3.56
1948	0.69	3.27
1949	0.64	3.70
1950	0.60	4.47
1951	0.77	4.70

Diseases

Prior to 1948, industrial medical services was optional. Many of the large-sized industries, mines and plantations had medical establishments of their own, some of them being of a high stand-
of their own, some of them being of a high
standard. Sickness absenteeism amongst these occupational groups were thus available only with individual industrial physicians and not available easily to outsiders. In 1948, the Employees' State Insurance Act was passed, thus nationalising the industrial medical services. Unlike the industrila physician who could provide only occupational health statistics in select industries, the Employees' State Insurance Corporation is expected ultimately to be responsible for health maintenance including occupational health of all industrial workers in India. The Act which provides a wide social security including cash benefit during sickness and maternity, meical and hospital care, compensation for accidents and diseases, has, by August 1956, come into operation in select areas and is expected to extend ultimately to other areas and other industries. The areas covered so far are Delhi, Kanpur, Greater Bombay, Coimbatore, Gwalior, Indore, Ujjain, Ratlam, Hyderabad, Secunderabad, Calcutta, Howrah District, Madras City and its suburbs, and some industrial centres in the Andhra and the Punjab. At present, the scheme covers about a million workers.

Research

Occupational health is the domain of more than one scientific discipline and hence many an agency, both governmental and non-governmental, has been contributing towards our present knowledge of occupational health. The Industrial Health Research Unit of the Indian Council of Medical Research, located at the All-India Institute of Hygiene and Public Health, Calcutta, publishes periodical reviews of the research work published in India and may be consulted for details.

PROSPECTS OF GROWING AND MANUFACTURING VEGETABLE DRUGS IN INDIA

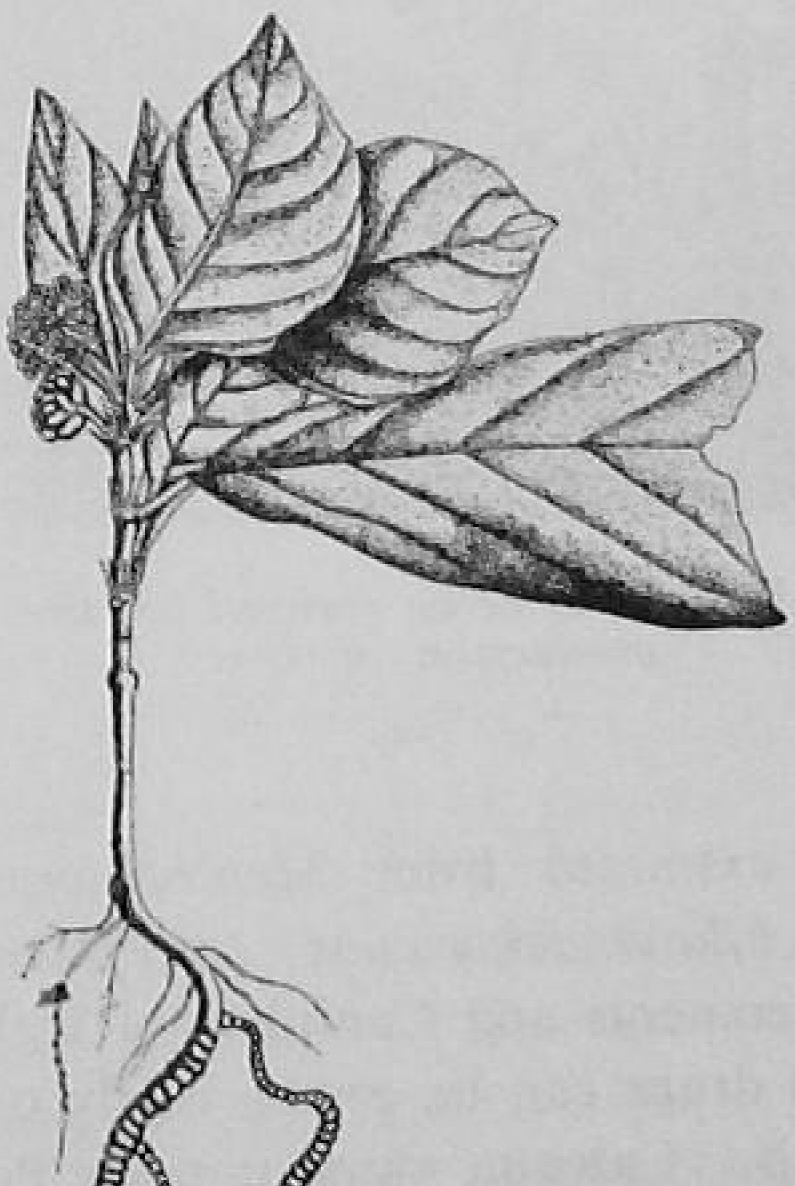
By Dr. K. Biswas,
Director-in-Charge, Medicinal Plants Schemes,
Government of West Bengal

It is gratifying that India after attainment of her freedom is gradually realising the immense possibilities of her vegetable resources lying more or less untapped hitherto. Scientific bodies like Indian Council of Agricultural Research, Council of Scientific and Industrial Research, Indian Council of Medical Research, several chemical and pharmaceutical firms, ayurvedic research and veterinary research associations, and other bodies interested in the subject, have felt the need of exploring the possibilities of producing on a large scale various indigenous and some exotic drugs in the country generally used in the treatment of common diseases in man and animals. But during the last quarter of a century very little progress had been made towards cultivation on a systematic and scientific basis and on a commercial scale of at least the well-known drugs which can be grown in India. A few sporadic attempts were made but the quantity produced was so little compared with United Kingdom, Russia, Holland, Germany, Austria, and other countries that they seem to be negligible. Although India has made laudable attempt in growing Quinine yielding Cinchonas in Darjeeling District of West Bengal and the Nilgiris, the production before the advent of the synthetic drugs was not even 5% of India's demand of Quinine and India had been importing Quinine all the time. In Kashmir the drug cultivation under the able guidance of Bt. Col. Sir Ramnath Chopra proved to be a successful venture, but then the production is not sufficient for the needs even of Kashmir. West Bengal has launched a similar campaign with full vigour and energy with the help of an expert committee and a batch of trained and experienced stac and labour. The efforts of the Medicinal Plants Committee, West Bengal, of which Dr. B. C. Roy, the Chief Minister, West Bengal, is the Chairman and the writer is the Member-Secretary with such experts as Dr. S. R. Bose, Professor of Botany, R. G. Kar Medical College, Calcutta; Dr. R. N. Chaudhuri, Director, School of Tropical Medicine, Calcutta; Dr. J. C. Sen Gupta, Chief Botanist, Botanical Survey of India; Shri A. N. Haider, Managing Director, Messrs. Gluconate Ltd., Calcutta; Shri B. Maitra, Director, Messrs. Calcutta Chemical Co., Ltd., Calcutta; and Shri S. Mukherji, Director, Cinchona, West Bengal (ex-officio), have already made satisfactory progress. But then how little and how much to be done in comparison with some of the foreign countries must be taken into account. "Chemist & Druggist" in their editorial (Annual No. June, 30, 1956, p. 599) reports under "Overseas Trade in Drugs during May, 1956" as follows:—"In May India again provided the best market for United Kingdom exports of drugs and medicinal preparations, the value of shipments to that country being £273,127."

Experimental cultivation and preliminary attempts so far made in this direction undoubtedly indicate that the prospect of cultivation of drugs both indigenous and exotic in India has a very bright future indeed. At first our apprehension in this direction was that soil, climate, funds, personnel, lack of organisation and trained labour would not make such an enterprise economically a success. Experience gained and progress made during the last few years prove more and more that such difficulties exist everywhere in all undertakings and can be surmounted gradually by applications of the results of acientific experiments now going on at the two centres, namely in Kashmir in the West Himalaya, and in Darjeeling District in the East Himalaya. It

Rauwolfia serpentina (natural habitat).

must, however, be borne in mind that cultivation of exotics and even the native medicinal plants growing almost wild in and outside the forest behave differently when grown beyond their natural habitat and ecological conditions. In every case, the life-history of each of the species



Psychotoria Ipecacuanha.

grown must be studied. The indigenous plant called "*Sarpagandha*" often known as "Wonder Drug" has become the topic of the day for its marvellous effect in the treatment of high blood-pressure, insomnia, lunacy, snake-bite and other cases. There seems to be a very bright prospect for this drug as Dr. M. C. Guha, Head of the Department of Chemistry, Salem College, West Virginia, U.S.A. emphasises in his letters to me that "If Rauwolfia proves to be what it is claimed I think it might turn out to be one of the greatest item next to jute." . . . He also wrote that while working with rattle snake master, it was his interest to find out if such drug of his own make would be effective on cobra venom. He sent his preparation in pill forms to his brother at Chittagong to try on actual snake bite. The latter reported that his preparation cured 25 cases snake bites of all kinds. Sometime ago a

Harvesting of digitalis purpura.

chemical Engineer of a world famous firm in U.S.A. told the author if he could supply 5 tons of roots of Rauwolfia serpentina per day to feed a giant plant for extracting reserpine and other alkaloids from Rauwolfia, he would then be prepared to start a factory. Similar productive field

Centre—Dig. Purpura;
Left—Dat. Stramonium;
Right corner—Dig. lanata majus and A. Visuaga.

Foreground—Rauwolfia serp. grown in thallies.

exists in the case of several other vegetable drugs of sufficient efficacy in the treatment of low-blood-pressure, skin diseases, leucoderma, prevention of abortion, cure for hay fever, asthma of certain types and chronic stomach trouble, rheumatism etc.

In Emetine-yielding Ipecac alone there lies enormous prospect before us. This sensitive plant was supposed to have been introduced sometime in 1866 in India (The then Royal now Indian Botanic Garden, Calcutta, and Cinchona Plantation, Darjeeling). It was thought that the plant could not be grown successfully. A method of cultivation has evolved since then and now at Rongo, a large scale extension of the cultivation of this drug under the auspices of the Medicinal Plants Committee, West Bengal, is proceeding satisfactorily. When completed the plantation is expected to yield about 18,000 to 20,000 lbs. of roots in 1962. From these further extension will proceed, and if we reach 50,000

Atropa acuminata.

lbs. target, then India will, as it appears from the present demand of Ipecac, have the major share of the drug in the world market.

Digitalis purpurea and *D. lanata* grown in the plantation of West Bengal have also given highly satisfactory result in the bio-assay experiments carried on by Dr. J. C. Gupta, Director of Cardiology, and Dr. B. P. Ghosh, Professor of Biochemistry, Seth Sukhlal Karnani Memorial Hospital (formerly, P. G. Hospital) in their Cardiological and Biochemical Laboratories. Infusion of fresh leaves of Digitalis is expected to have a good effect in the treatment of Cardiac oedema as stressed by Dr. B. C. Roy. Experiment on this aspect is also going to be taken up. Ergot grown here is also found to be of good quality and fulfils the B.P.C. standard of potency. Peppermint oil, Camphor oil and

Rye spikes being sprayed for the production of Ergot.

Camphor extracted from *Mentha piperita* and *Ocimum kilimandcharicum* respectively show richer oil contents and Camphor of high quality. These two drugs can be grown easily on an economic basis. Calcutta alone imports Peppermint oil of about rupees one lakh per year. Menthol from *Mentha arvensis* now grown successfully in moist areas of the lower ranges of the Rongo hills is also likely to be a success. *Dioscorea prazeri* and *D. deltoida*, *Agave americana* yielding Diosgenin, and *Hydnocarpus wightiana*, one of the sources of Chaulboogra oil found almost wild in this part of the country are potential sources of a good industry. The extraction of oil from these and other essential oil yielding plants of medicinal value to be introduced and camphor may be developed into small cottage

industry in these hilly areas where the labour problem and unemployment among the hill-men are becoming more and more difficult to tackle with. The trained labour of the Cinchona plantation which is going to be gradually localised may be diverted profitably towards cultivation of the different drugs and essential oil yielding plants and manufacture and extraction of camphor and oil on a cottage industry basis.

Moreover, there are about 2,000 species of medicinal plants of therapeutic value in India. Besides several exotics which have since been introduced and acclimatised and growing successfully in different parts of India particularly in Kashmir and Darjeeling district. At least about 100 species out of these 2,000 species, like *Rauwolfia serpentina*, *Hydnocarpus wightiana*, *Eupatorium ayapana*, Cinchona, Ipecac, Digitalis, Aconitum, Swertia, Datura, Atropa, Mentha, Eucalyptus, Citronella, Ephedra, Rheum, Valeriana, Podophyllum, *Glycyrrhiza glabra*, Cassia, *Strychnos nuxvomica*, *Papaver somniferum*, Coryandrum, Polygala, Pyrethrum, Colchicum, Catechu, *Coffia arabica*, *Artemisia brevifolia* (Santonin), Lobelia, Strophanthus, Hemidesmus, Gentiana, Capsicum, *Erythroxylon cocoa*, Hyoscyamus, Myristica, Ricinus, Piper, Salix, *Cannabis sativa*, Scilla, *Plantago ovata*, Lycopodium, Ergot and many others as mentioned in my "Bharatiya Banaushadhi" (in Bengali) and "Common Medicinal Plants of Darjeeling and Sikkim Himalaya", can all be grown on a large scale and the alkaloid, the active principle, and the oil from these can be extracted and the finished products can be and should be manufactured in the country. Thus cultivation of the medicinal plants in India and manufacture of drugs from so many medicinal plants if done in a proper scientific manner and on an economic basis, will not only prove to be the great source of revenue in this country, but at the same time will contribute much to the benefit of humanity at large.

Medical Research and Public Health Practice

DR. C. G. PANDIT,

Director,

Indian Council of Medical Research

Enlightened public health practice derives its strength and light from the fruits of medical research. The history of the growth of public health practice in India as in other countries is linked intimately with the history of medical research.

The Indian Council of Medical Research was born in the year 1911 under the name Indian Research Fund Association (IRFA). It is a body registered under the Registration of Societies Act XXI of 1860. It is supported entirely by funds from the Government of India. Since its inception, a major concern of the Council had been to sponsor studies on the causation, mode of spread and prevention of communicable diseases. The work done under the auspices of the Council in this field has provided the scientific basis so necessary in the execution of the public health programmes which are in practice today. To cite a few examples, the basic research conducted under the auspices of the Council on Malaria, Cholera, Plague, Kala-azar and more recently on Leprosy and Filariasis has formed successively the foundation for public health campaigns against these diseases. The Council is now engaged in studies on the epidemiology and chemotherapeutic trials in Trachoma and Tuberculosis. These investigations are of the nature of pilot studies which are expected to prpovide the data for formulating national campaigns against these diseases.

As the major communicable diseases are being brought under control, others are assuming relatively greater importance. Of these, virus diseases, health problems created by increasing industrialization of the country and problems in mental health are of importance and the Council is sponsoring studies into these fields in increasing measure.

Malnutrition, both by its direct and indirect effects on the health of the nation, is a major concern of the public health workers. It is one of the subjects that has received early and continuous attention of the Council. Today, the Council supports a vast programme of research of both applied and fundamental significance in the field of nutrition all over the country. This work is closely intergrated with the public health nutrition activities of the various State Governments.

While instances of this kind can be multiplied, the central theme continues to be the same, to adapt the research programme to the needs of changing situation and to provide the public health administrator with a scientific basis for the promotion of the health and well-being of the community.

MEDICAL AND PUBLIC HEALTH RESEARCH INSTITUTES IN INDIA

(I) Indian Council of Medical Research

By Dr. C. G. Pandit, ICMR, New Delhi

Prior to 1947 medical research in India was confined mostly to the researches undertaken by a few specialised institutes and through a grant-in-aid programme of the Indian Research Fund Association, which was established for the purpose in 1911. The Health Survey and Development Committee which had submitted its report in 1946, had reviewed the whole position and had noted that the outstanding defect was almost the complete absence of organised medical research in various departments of medical colleges in the country.

To remedy these defects, the Committee had made certain specific recommendations. One of these was the creation of a statutory organisation for the purpose of:—

(i) Formulation of policies in regard to the future development of medical research in India;

(ii) Stimulation of research activities in the Universities; and

(iii) Assumption of responsibilities for the selection and training of medical research workers in the Country.

These recommendations have now, to a great extent, been implemented.

The activities of the Indian Research Fund Association have been re-orientated under its new name, 'The Indian Council of Medical Research'. It is a body registered under the Registration of Societies Act XXI of 1860. The aims and objects of the Council, as set forth in its memorandum of Association, are in the main as follows:—

1. The prosecution and assistance of research, the propagation of knowledge, and experimental measures generally in connection with the causation, mode of spread, and prevention of disease primarily those of a communicable nature.
2. To initiate, aid, develop and co-ordinate medical research in India and to promote and assist institutions for the study of diseases, their prevention, causation and remedy.
3. To finance enquiries and researches.
4. To exchange information with other institutions, associations and societies interested in the same objects, and specially in the observation and study of diseases in the East and in India in particular.
5. To offer prizes and to grant scholarships including travelling scholarships in furtherance of the objects of the Council.
6. To do all other such things as are incidental or conducive to the attainment of its objects.

The Council receives annually a substantial grant-in-aid from the Government of India to carry out its programme of medical research in the Country. This grant-in-aid is the only source of income of the Council.

The control and management of the Council is vested in a Governing Body, the President of which is the Hon'ble Health Minister of the Government of India. The Secretary to the Government of India in the Ministry of Health is the Vice-President and its members include among others, the Director-General of Health Services of the Government of India, the Director-General of Armed Forces Medical Services, Ministry of Defence, the Director of the Council of Scientific and Industrial Research, the Directors of Medical Research Institutions, representatives of

Universities, Parliament and Scientific Organisations.

In all scientific and technical matters, the Governing Body is assisted by a Scientific Advisory Board, the Chairman of which is the Director-General of Health Services of the Government of India. The Board has as its members eminent experts in the various branches of medical sciences.

The programme of research sponsored by the Council embraces almost all the fields of medical sciences. The Scientific Advisory Board is guided in its work by various Advisory Committee on specific subjects and their Sub-Committees. These are:—

Advosory Committees On

1. Clinical Research.
2. Communicable diseases.
3. Environmental Hygiene and Sanitation.
4. Industrial Health.
5. Maternal and Child Health.
6. Mental Health.
7. Nutrition.
9. Physilogy and Pharmacology.
9. Virus Diseases.

Sub-Committees Deal With

1. Cardio Vascular Disetses and Hypertension.
2. Haematology.
3. Liver Diseases.
4. Therapeutic Trials.
5. Cholera.
6. Leprosy.
7. Malaria and Arthropod Borne Diseases.
2. Tuberculosis.
9. Venereal Diseases.
10. Dissemination of Information on Nutrition.
11. Evaluation of Nutritional Status.
12. Nutrition Survey.
13. Population Growth in relation to Food.
14. Protein Malnutrition.

To these Advisory Committees are appointed rsearch workers of long standing and expeprience in their specific fields. The Advisory Committees and Sub-Committees not only review the work done during the year, but in many cases have indicated new lines of investigations in their respective subjects. They have, in addition, helped the Governing Body, and through it the Government of India, in formulating policies in their respective spheres and in matters of vital interest to the Country.

The Scientific Advisory Board and the Advisory Committees meet once in a year to review the research work done under the Council during the year and to formulate research programme of the Council for the next year. Mid-year meetings are held as and when considered necessary.

In order to ensure the closest co-operation between workers and to prevent overlapping of effort, research workers and administrative heads of medical and public health departments in the country are also invited to attend the annual meetings are held in different centres in the country and, as far as possible, in close association with medical colleges with a view to create interest in research in them. The members of the staff of the college are allowed to participate in any technical discussions in the Sub-Committees of the Council. Lectures on medical subjects are arranged at the time of the annual meetings of the Scientific Advisory Board and its Advisory Committees. Symposia on medical subjects are also arranged by the Council from time to time.

The Council maintains the Nutrition Research Laboratories, Coonoor, which is the premier institution in India entirely devoted to basic and fundamental research in nutrition and allied sciences. The Laboratories were founded in 1925 in order to provide a centre for research on nutritional problems; to act as an information bureau so as to make the results of research freely available to all concerned and, in collaboration with public health officers, to translate these results into practical nutritional work.*

Besides giving grants to research institutions and individual research workers, the Council has also set up in many institutions special research units which are on a quasi-permanent basis and which also serve as nuclei for the training of personnel in the specialised subjects. The units so far established are:—

(i) Nutrition research unit at the Seth G. S. Medical College, Bombay.

(ii) Nutrition research unit at the University College of Science & Technology, Calcutta.

(iii) Clinical research unit at the School of Tropical Medicine, Calcutta.

(iv) Clinical research unit at the Indian Cancer Research Centre, Bombay.

(v) Neuropathological unit at the Indian Cancer Research Centre, Bombay.

A Virus Research Centre has been established at Poona under the joint auspices of the Indian Council of Medical Research and the Rockefeller Foundation. The work in the Centre, in its initial stages, will be confined to the investigation into the epidemiology of virus diseases transmitted by arthropeds and peculiar to India excluding, to avoid duplication, the commonly known virus diseases such as smallpox, rabies and poliomyelitis. It is propopsed to make provision, in due course, at the centre for the training in virus research of workers, deputed by other agencies of the Central and State Governments as well as the nominees of Medical Colleges in the Country.

The Council awards a number of research fellowships to deserving medical and science graduates for work under expert guidance in the University Medical and Science Institutions. In order to meet the demand of teaching medical institutions for personnel trained in methods of research, the Council has recently reorientated its programme of fellowships. Aided by a grant, from the Rockefeller Foundation, the programme now has the following objectives:—

1. Training teachers and research workers for medical college staffs;
2. Aiding the development of certain departments in medical colleges as post-graduate training centres through providing them with able young doctors in training who would assist in their research and teaching programmes;
3. Improving the value of and the respect for Indian Medical qualifications. Foreign post-graduate training, now so largely relied upon can never meet the quantitative needs for competent medical teachers in India, nor is training abroad under totally different conditions the best preparation for a medical or scientific career in India.

It is anticipated that candidates for training abroad will now be selected from among those who have received such training within the country in the first instance.

The Council maintains a Library at the Central Research Institute, Kasauli. For the supply of copies of important literature to research workers in India, the Council has set up two microfilm units, one at the Central Research Institute, Kasauli, and the other at the Tata Memorial Hospital, Bombay. A Photostat Unit has also been started at the Central Research Institute, Kasauli.

A detailed account of the various researches carried out under the aegis of the Council is published annually in a technical report known as the "Annual Report of the Scientific Advisory Board of the Indian Council of Medical Research." This report is distributed widely to medical research institutions and workers in India and abroad. The Council publishes two scientific journals viz., the Indian Journal of Medical Research and the Indian Journal of Malariology. In addition to the above publications, the Council also publishes periodically special reports on important problems relating to nutrition and public health.

Financial aid for Medical Research in the Second Five Year Plan—The funds of the Indian Council of Medical Research are derived entirely from grants-in-aid from the Government of India. Since its inception till the year 1923, this organisation was in receipt of a grant-in-aid of Rs. 5,00,000 annually. It has since been receiving varying grants-in-aid from year to year. Since Independence, the Indian Council of Medical Research has enlarged the scope of its activities considerably and they now embrace almost all fields of medical sciences. The Council now receives a grant-in-aid of Rs. 12,00,000/- annually, as a standing charge, for its current activities and *ad hoc* grants for such research projects as are approved from time to time by the Planning Commission and the Ministry of Health. For the year 1954-55, the Council received a grant-in-aid of Rs. 17,00,000/-. This does not include the allotment made by the Rockefeller Foundation for the ICMR/RF fellowship programme for training of junior members of the staff in the Medical Colleges in methods of teaching and research in basic and clinical fields within the Country.

For the Second Five Year Plan period, the Government of India has been requested to sanction a minimum grant of Rs. 25,00,00/- per annum for financing the Council's routine administration and research activities and for the development of its research programme. In addition, there are a member of research projects of national importance on which an all out attack has not been made up to now and which must receive attention in the Second Five Year Plan. Additional funds viz. Rs. 2,75,00,000/- for the period 1956-57 to 1960-61 have been requested from the Planning Commission and the Government of India. Thus a total sum of

Rs. 4,00,00,000/- would, it is anticipated, be available to the Indian Council of Medical Research in the Second Five Year Plan for its expand activities.

---

(2) Haffkine Institute, Bombay

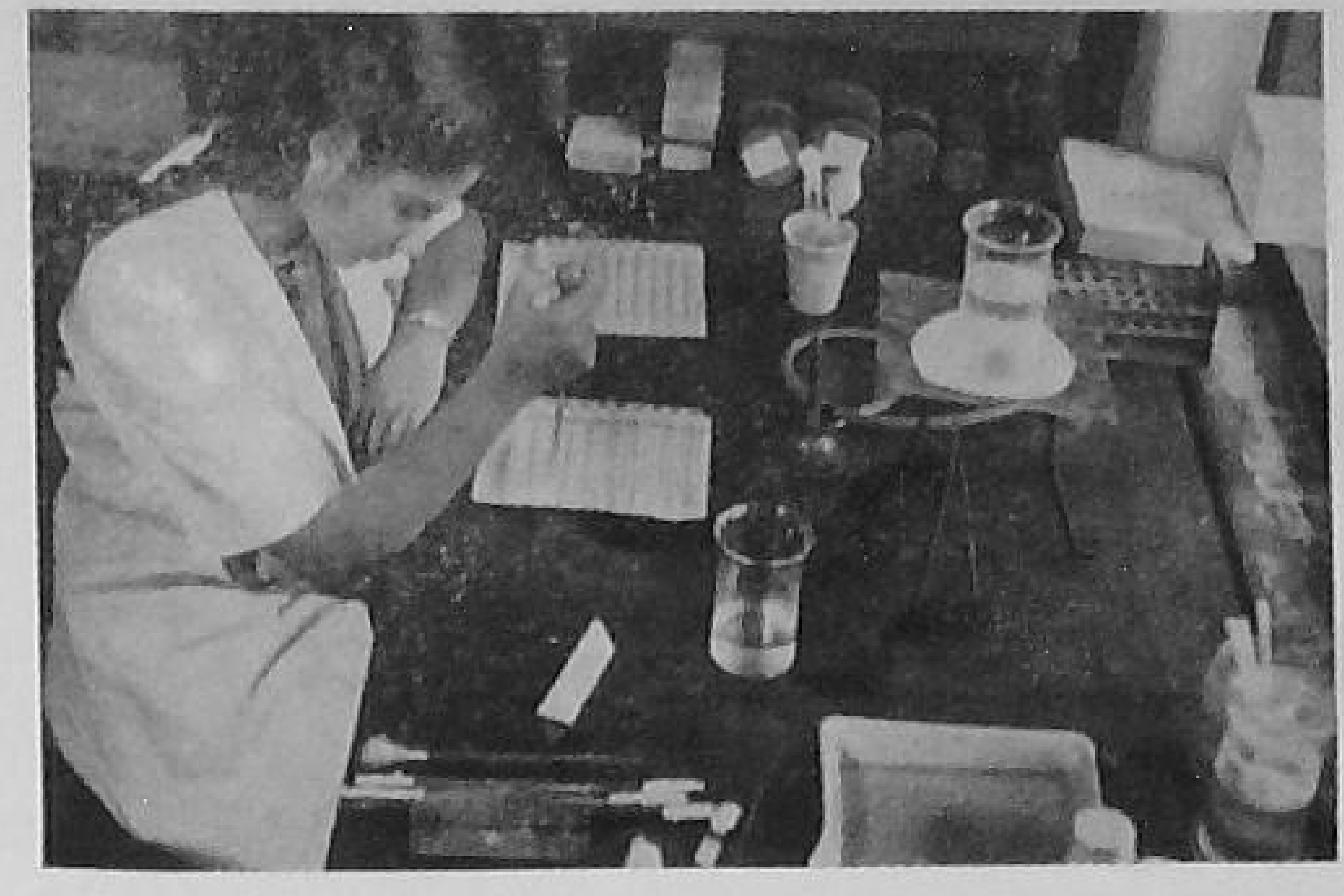
DR. D. W. SOMAN, Director

Haffkine Institute, Bombay.

This Institute of the Government of Bombay is one of the biggest research institutions of its kind in South-East Asia. Originally started by the Government of India under the Directorship of Dr. Waldemar Mordecae Wolf Haffkine, it has grown from a small institute into one of large dimensions. The present building wos occupied in 1899. It was the then abandoned residence of the Governors of Bombay who had annexed the building from the Jesuits in 1719. The Jesuits, originally, in 1673 built a monastery at the site of a Hindu temple of 'Parli-Vaijnath', after which the village Parel was named. In this building the Institute was called Plague Research Laboratory; in 1906 the Bombay Basteriological Laboratory and finally, 20 years later in 1926, at the instance of the Director, Lt. Col. F. P. Mackie, I.M.S., the laboratory was aptly named as Haffkine Institute to commemorate the name of its founder.

Originally, only plague and cholera vaccines were prepared in the Institute. By and by with the growing importance of bacteriological work in the diagnosis and treatment of tropical diseases, many new departments were added, such as the Department of Biochemistry and the Rabies Section. As a result of this, patients bitten by rabid dogs received antirabic treatment in Bombay, instead of having to go all the way to Coonoor in South India or to Kasauli in North India.

World War II gave an enormous impetus and opportunity to develop the activities of the Institute still further as supplies of many vital biological products were cut off from foreign countries. As a reslt of this development the present member of departments is as follows:



Influenza virus work.

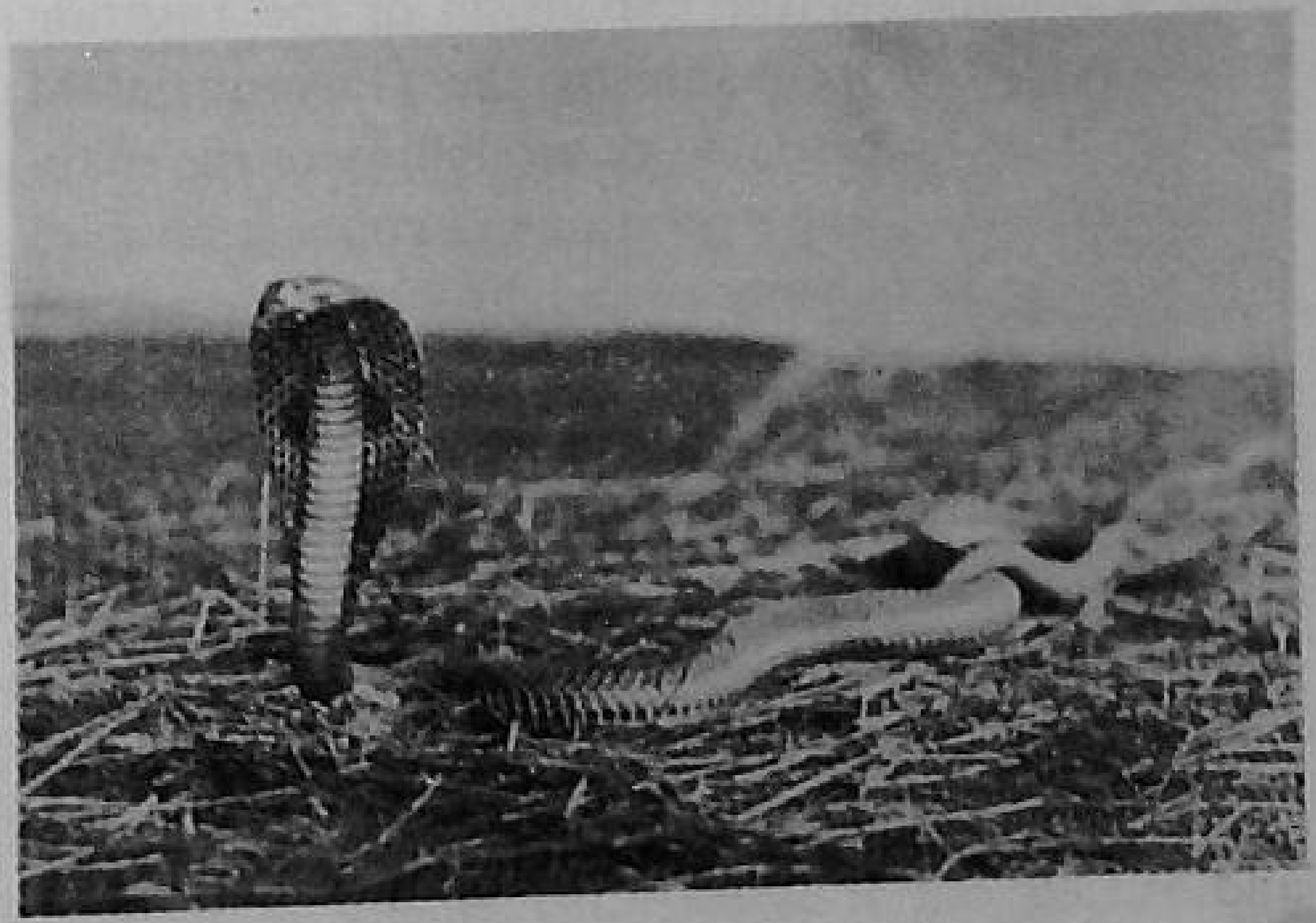
(1) Department of Vacines, (2) Department of Antitoxins and Sera, (3) Department of Pharmacology, (4) Department of Biochemistry, (5) Department of Viruses, (6) Department of Chemotherapy, including Rabies, (7) Department of Entomology, (8) Department of Clinical Pathology, (9) Blood Bank Section, (10) Media Section and (11) Yellow Fever Section.

Besides the manufacture of cholera and plague vaccines and research on these subjects, the Institute started manufacturing sulpha drugs, vitamin tablets, antirabic vaccine, diagnostic reagents, lyophilised blood plasma, antitoxins and toxoids, anti-snake venom serum (Anti-venenei, sulphetron injections on leprosy, various parenteral solutions and a non-poisonous antiseptic called Pemon, etc.

The Department of Clinical Pathology gives excellent free diagnostic aid to the medical profession in infectious diseases, such as typhoid, plague, cholera, diphtheria, etc. The Blood Bank, in addition to manufacture of lyophilised blood plasma, carries on research work on Rh factor and does Rh tests for private medical practitioners. The Department of Virus Diseases studies other virus diseases besides Rabies; an Influenza Centre under the auspices of W.H.O. has been established in this Department. It is now engaged in research on preparation of the avianized rabies vaccine, Hyperimmune Rabies Serum and Influenza Vaccine. The Department of Pharmacology is engaged in drug testing under the Drugs Act and evolving new techniques in drug testing and modifying the current ones. The Department of Biochemistry is engaged in doing biochemical tests and research on the new techniques of testing. The Department of Antitoxins and Sera is engaged on research in preparation of Triple Vaccine. The Media Section is engaged in preparation of various parenteral solutions, which have a pressing demand from hospitals and medical profession. The Department of Entomology, besides its research work on plague epidemiology, is engaged on research on breeding snakes under their natural habitat with a view to getting increased yield of venoms from various poisonous snakes. For this purpose an open-air snake farm has been established in the Institute and live poisonous snakes are kept in the farm. The Yellow Fever Section is attached to the Institute on behalf of the Government of India and it carries on inoculation of international travellers for Yellow Fever and other vaccines. It is also entrusted with storage of the Yellow Fever Vaccine and the conducting of potency tests periodically.

Every Department is engaged in research work in its respective sphere to keep pace with the modern scientific developments. With a view to building up scientific personnel in the country, the Institute admits fresh science and medical graduates for conducting postgraduate studies in various branches of medical science. The Institute also undertakes research enquiries on behalf of the Indian Council of Medical Research, the Council of Scientific and Industrial Research, New Delhi, and some private commercial firms interested in research. The Institute laboratories are exceptionally well-equipped with modern equipment and it has become an ideal research centre for research-minded students. In addition, it has an excellent library service containing over 20,000 publications and 250 medical and ecientific periodicals. The library facilities are free and open to outsiders also.

The Institute has a technical staff of more than 100 and a subordinate staff of 420 workers, supervised by 8 Assistant Directors under the general supervision the Director.



Cobra moving in the snake farm.

The annual budget of the Institute runs into Rs. 22 lakhs and the manufacturing activities contribute a good source of income to the State Exchequer.

The Institute will complete 60 years of its service in 1959. Distinguished scientists from all over the world and international tourists make it a point to visit the Institute.

---

(3) Central Research Institute, Kasauli

Director

I. This Institute is financed by the Government of India and is administered by the Director General of Health Services on behalf of the Ministry of Health.

II. *History:*

In the early years of the present century a scheme for the establishment of a Bacteriological Department and a Central Institute for Medical Research in India was initiated by the Sanitary Commissioner with the Government of India. This scheme met with the approval of the Government of India, and, in 1904, work was commenced on what is now the Central Research Institute of India.

The Institute was located at Kasauli, in the Simla Hills, about 5,000 feet above sea level. The original site was presented by the Maharaja of Patiala and the then existing residential buildings were modified, extended and suitably adopted for laboratory use. In 1933 further extensive alterations were made and laboratories constructed on modern lines, profiled. Those laboratories were further added to when, in 1939, the functions of the Pasteur Institute of India were incorporated with those of the Central Research Institute. In 1946 a scheme for the expansion of the Institute was accepted in principle by the Government of India. This necessitated re-modelling of the main buildings. Building operations in connection with this scheme were commenced in 1947, but owing to unsettled conditions, transport and other difficulties, these were not completed, according to schedule, within the year but were nearly completed in 1949.

III. *Functions and Achievements:*

The functions of the Institute are numerous and varied but it is intended chiefly to provide facilities for:

(i) research work on problem of medical and public health interest;
(ii) manufacture of vaccines and sera;
(iii) training of selected medical officers and technicians in medical research and laboratory technque;
(iv) to act as a centre on which enquiries in the field can be based; and
(v) routine diagnostic work.

Originally sections were formed for bacteriology, malariology, helminthology, entomology and manufacture of biological products, but the activities have varied from time to time, depending on the experience and specialized knowledge of members of the staff. Immunological problems have always been the main subjects of research, but other problems both in the laboratory and in the fields, have not been neglected and much attention has been paid to such subjects as medical entomology, malaria, kala-azar, snake venoms, cholera, rabies etc. For 45 years the name 'KASAULI' has suggested all that is best in medical research and laboratory work in India. Among the general public the association of Kasauli with dog bite and as a final court of appeal for bacteriological diagnosis has been particularly notable. It is the work of this Institute that has put Kasauli on the map of the world. One of the aims of this laboratory has been to make India self-sufficient in vaccines and other products and to set up a model in research and in production of biologicals. The Institute-manufactured products are distributed not only throughout India but in War time, both during World War I and II, they were sent to many other theatres of war including Malaya, Burma, Egypt, East Africa, Italy, Iraq, Iran and Syria.

An important feature is the large scale preparation of anti-snake venom serum. Kasauli antivenene is bivalent, purified and concentrated globulin solution specific against the venoms of

Cobra and Russell's Viper which are respopnsible for the vast majority of deaths from snake bite in India. During the war years 1939-46 manufacture of vaccine and sera reached the unprecedented total of one million doses monthly. This figure was exceeded when over a million doses of cholera vaccine alone were issued in a matter of three weeks during an epidemic of cholera in U.P., and Central India.

Besides varities of routine diagnostic work, supply of strains, agglutinable suspensions, high titre diagnostic sera, preparation of autogenous and a large variety of minor curative vaccines are some of the miscellaneous duties.

The institute maintains a large collection of bacteria which are pathogenic to man and acts as the National Collection of Type Cultures for the country. It supplies standard strains to medical colleges, research laboratories, commercial concerns etc., for teaching and research purposes.

The Institute acts as an Information Bureau and has to answer hundreds of enquiries in the course of a year from Medical Officers, lay-public, civil and military establishments, on all sorts of scientific and non-scientific points relating to the use of vaccine, sera, diagnostic reagents, snakes, and their identification, treatment of snake-bite cases, rabies and antirabic treatment etc.

The Institute has the responsibility for the inspection and licensing of firms engaged in the manufacture of biological products and for the testing of samples before recommending the acceptance by the Government of their supplies

This Institute also acts as the Government of India's Assay Centre under tht Drugs Act (1940) for the control of biological products imported or manufactured in India, and affords the necessary training to medical officers and technicians. Several countries, notably Thailand, Burma, Afghanistan, Iraq, Ceylon etc. have sent their doctors for bacteriological training to this Institute during the last few years. The Institute is the distributing centre of 'standards' to research institutions and manufacturing firms engaged in production of sera and vaccines.

The Director is the Editor of the Indian Journal of Medical Research, four issues of which are published annually. This journal is the principal medium for publishing the results of original medical research work carried out in India.

IV. *Research work from 1947 to 1953:*

In the circumstances, when every available hand was required for the manufacture of cholera, T.A.B. and other prophylactic and curative vaccines, to fight disease and epidemics it was inevitable that research activities should be relegated to the background. Nevertheless, immediately as the conditions improved investigations into various problems of public health importance were commenced viz;—

(1) Studies on various aspects of the problem of rabies with the object of producing a more potent vaccine which would be free from the unpleasant reactions which occasionally follow antirabic treatment.

(2) Work on snake venoms with particular reference to the mode of action of Russell's Viper (daboia) Venom, neutralisation of Krait and Cobra venoms by soap solution, treatment of vipterine poisoning by intravenous injection of heparin, improved methods of preparation of antivenene etc.

(3) Basic studies on the immuno-chemical, serological and enzymic properties of cholera and allied vibrios and on the isolation of antigenic fractions from these vibrios.

(4) Preparation of cholera diagnostic and typing sera and standardisation of cholera vaccine on behalf of the WHO.

(5) Studies on anti-tubercular drugs and on chromogenic strains of acid fast bacilli isolated from convalescent cases of pulmonary tuberculosis have been undertaken.

Researches on applied and fundamental aspects of typhoid, cholera, rabies etc., are in constant progress detailed of which have been published in scientific journals.

---

(4) The King Institute, Guindy

(CONTRIBUTED)

The King Institute of Preventive Medicine, Guindy.—The King Institute was founded as a provincial Public Health Laboratory for the Madras Presidency in 1903. The Institute itself stands in a spacious compound at Guindy, about five miles from Madras City, and consists

of a main building and a group of subsidiary buildings. Additional buildings have been added from time to time in order to provide accommodation for the gradually increasing volume of work undertaken. The accommodation available was adequate until the outbreak of the present war. Recently, sanction has been obtained for the construction of additional buildings. The accommodation provided for the routine and research activities of the Institute is well designed and well equipped. The B.C.G. Vaccine Laboratory is also housed in the same compound.

The chief functions of the Institute, are routine public health laboratory, advisory and research work. The routine functions include:

(1) Bacteriological, serological and pathological examinations of specimens received from all hospitals and dispensaries in the State including the Mission Hospitals.
(2) Manufacture of bacteral vaccines, sterile injectules, therapeutic sera and the small-pox vaccine lymph for the use of hospitals and public health department and people of the State.
(3) Conduct of Public Health Laboratory work e.g. examination of water, food, milk, drugs etc.
(4) Maintenance of Blood Bank Service for the city of Madras.

Advisory work is carried out on a large scale and includes technical advice to the Government of Madras, including the Medical, Public Health, Fisheries and Hydro-electric Departments in connection with medical and public health problems of all kinds and with problems connected with existing or projected water-supplies. Many other matters affecting the public health are referred to the Institute by the Public Health Department.

Research is undertaken by individual workers in addition to the routine duties allotted to them. A number of special research inquiries financed by the Indian Research Fund Association have been carried out at the Institute. Most of these inquiries have, in the past, produced valuable results as, for example, the special investigations carried out on virus diseases, including vaccine virus, sandfly fever virus, typhus, dengue, trachoma, etc.; cholera, including studies on the vibrios, epidemiology, treatment and the value of prophylactic inoculation; plague, including epidemiology and the value of prophylactic inoculation; malaria, including experimental laboratory investigations on immunology, protozoology and treatment; endemic fluorosis, the occurrence of which was first brought to notice by the Institute and the causes of which have since been elucidated; water and sewage bacteriology, some of which has been carried out under the auspices of the Water and Sewage Purification Committee; investigations on the algal flora in water-supplies originally financed by the Indian Research Fund Association and now carried out as a routine by a permanent section of the Institute.

Another prominent feature of the work of the Institute is the maintenance of three special "Investigation Units", which being mobile, can be despatched at short notice to investigate in the field any outbreaks of epidemic disease which may occur in the districts, so that suitable preventive measures may be taken without delay. Since 1922, when the first of these units was set up, they have undertaken special inquiries on dysentery, relapsing fever, typoid fever, cholera, malaria, gastro-enteritis, kala-azar, filariasis, glandular fever, diphtheria, sprue, jaundice, beri-beri, meningitis, plague, stomatitis, etc.

To carry out the above functions the Institute is organised into 12 sections each under a charge of specially qualified officer:—

(1) Clinical Bacteriology and Media.
(2) Serology.
(3) Auto-vaccines and Stock Cultures.
(4) Large-scale manufacture of Prophylactic Bacterial Vaccines.
(5) Manufacture of Sterile Solutions for Injection.
(6) Bacteriophage.
(7) Manufacture of Vaccine Lymph.
(8) Manufacture of Anti-toxic Sera.
(9) Public Health Section (including water analysis, etc.).
(10) Chemical Section.
(11) Government Analyst.
(12) Blood Bank and Plasma Processing Centre.

Regular courses of instruction are organised at the Institute for students

(a) taking B.S.Sc. course of the Madras University—on the manufacture and use of vaccine lymph.
(b) taking Diploma in Laboratory Science—on serological methods for one month.
(c) studying Sanitary Inspector's course—on vaccination work.

In addition, special instruction is given to medical graduates in general bacteriological methods, usually for a period of three months.

during which they are attached to the officer-in-charge of the appropriate section. Candidates desirous of undergoing training as laboratory attendants may be admitted for special instructions.

The Institute possesses a good library, the books and periodicals which are wtll chosen for the type of work undertaken, namely, medicine, public health, bacteriology, parasitology, immunology, analytical chemistry, etc.

The conditions of manufacture of biological products at the Institute particularly the vaccine lymph preparation are of high standard.

---

(5) Production of B. C. G. Vaccine

By K. S. Ranganathan, Madras.

When our National Government decided in 1948 to introduce B.C.G. Vaccination (a practical application of the scientific knowledge and world experience) for the benefit of the general public, the supply of such a vaccine in large quantities was the first problem that confronted it. It was obviously not feasible to import it week after week from one of the production centres in Europe because of the distances, apart from the question of cost. The vaccine has to be used within 10 days of preparation. Another practical difficulty was to ensure its refrigeration throughout its transport to India and till the time of its use in the field. The Government of India, therefore, decided to set up a production centre in India itself.

In view of the highly specialized nature of the production technique the Government deputed the writer and his assistant, Mr. A. V. Oomen, to the State Serum Institute, Copenhagen for a period of four months to study the production technique in all its aspects. Meanwhile, at the request of the Government of India the World Health Organisation sent a Danish B.C.G. expert, Dr. Poul Lind, to start a B.C.G. Vaccine Laboratory in the Kind Institute, Guindy, Madras. On his return to India the writer took over charge of the Laboratory after he had worked with Dr. Poul Lind, in the newly established laboratory for three months.

The laboratory went into active production from February 1949 when the International Tuberculosis Campaign B.C.G. teams arrived in India to start work under the auspices of the Government of India.

The preparation of B.C.G. vaccine requires great technical skill. Many precautions have to be taken to ensure that the vaccine is pure and of the proper strength. B.C.G. vaccine is a live vaccine, i.e., the bacilli in it are living ones and no antiseptic like phenol can be added to it as a preservative. There are numerous chances of accidental contamination with extraneous organisms from the atmosphere, from the personnel or from the glassware etc. used in the preparation of vaccine. It can be appreciated what a difficult job it must be when it is remembered how many millions of germs are floating in the atmosphere of the plains in the tropical countries. The following paragraphs will show the great amount of care and precautions taken at the B.C.G. laboratory to ensure purity and harmlessness of the vaccine.

The laboratory is housed in a separate new building isolated from, and independent of the other buildings in the compound. The staff is employed whole-time and are prohibited from engaging in other work. No other bacteriological work is undertaken in the building. The maintenance of the B.C.G. cultures, preparation of the vaccine, etc. are carried out in a dust-fee air-conditioned room which is protected by double windows and double doors. Before entering the room all who work there have to change and put on clean coats, masks and caps. They have to wet the special footwear by standing in a tray of antiseptic lotion before entering the room. The atmosphere of the room itself is sterilized by means of ultraviolet lamps fitted to the ceiling and under the tables so that every nook and corner of the room may be radiated before the work begins.

The staff members are kept in good general health which is checked by periodic medical examinations including X'ray of the lungs.

The B.C.G. cultures that are grown in special incubators are kept under lock and key in this room. The keys are kept in the presonal custody of the Director and are accessible only to his Chief Assistant. The room itself is kept locked when not in use.

Started 3 years ago as the production centre

for the supply of vaccine to meet the requirements of India, this National Laboratory has since expanded enormously and now ranks as one of the biggest B.C.G. production centres in the world. The Government of India has undertaken to supply B.C.G. vaccine to foreign countries as well. Malaya, Ceylon, Burmah and Thailand now obtain their supplies from the production centre in Madras. For some time Pakistan also obtained its supplies from here.

Some ideal of the volume of work can be had when it is said that the monthly production exceeds one million doses of vaccine and one and a half million doses of tuberculin solution. The Government of Iidia supplies the vaccine free of cost to the States in India and for cost on a non-profit basis to foreign countries.

The responsibility does not end with the production of vaccine. As already mentioned the (It would be interesting to know that up to the end of December 1955, 70 million doses of tuberculosis solution and more than 25 million doses of vaccine have been supplied by this Laboratory.) vaccine has to be used within 10 days of manufacture and it has to be kept refrigerated throughout. The vaccine has therefore to be rushed by plane (packed with ice in specially constructed insulated containers) to all the centres in India and abroad in order to give time for distribution to remote areas. The ice can be replenished en route at air ports such as, Bombay and Calcutta, if necessary. The consignees are previously informed of the arrival of the parcel to enable collection and arrange for immediate refrigeration.

The above description gives some idea of the care and attention and organisation required to ensure the regular weekly supply of vaccine to centres in and out side India.

[Courtesy:—Bulletin issued by D. G. Health Services (Tuberculosis Section), New Delhi. March '52.]

---

(6) School of Tropical Medicine

DR. R. N. CHOWDHURI, Director

Introduction: (Short history)

The School of Tropical Medicine with its attached hospital, Carmichael Hospital for Tropical Diseases, was established in 1920 far-sighted through the efforts of Sir Leonard Rogers. During these 35 years, the School has rendered valuable services to medical education and research on various tropical diseases and allied basic sciences as well as relief to a vast number of patients.

The School at present comprises the following 14 departments:—

(i) Tropical Medicine, (ii) Protozoology, (iii) Bacteriology and Pathology, (iv) Pharmacology, (v) Chemistry, (vi) Dermatology, (vii) Haematology, (viii) Entomology, (ix) Bio-chemistry, (x) Leprosy, (xi) Helminthology & Filariasis, (xii) Kala-azar, (xiii) Radiology and (xiv) Clinical Pathology.

The Departments of Serology and of Leprosy Control of the Government of India, the Pasteur Institute, the Public Health Laboratory and the Drug Control Laboratory of the Government of West Bengal are housed in this building.

Activities :

Teaching

The School provides post-graduated instructions which are of particular importance to tropical countries especially India, viz., one lasting for 9 months leading to the Diploma in Tropical Medicine and Hygiene under the University of Calcutta, and the other for 3 months for the Licence in Tropical Medicine under the Faculty of Tropical Medicine and Hygiene, Government of West Bengal. The School also provides for training in special subjects.

These courses of study draw students from different States in India, and from several other countries e.g., Burma, China, Thailand, Malaya, Egypt, Malta and occasionally from the United Kingdom, U.S.A. and Western Germany.

Medical Relief

The Hospital for Tropical Diseases provides facilities for thorough investigation and treatment of the various tropical conditions. The wealth of clinical material available at the Hospital is very valuable for teaching and research. The present number of beds in the Hospital is 114, but there will be a considerable increase in this number when the additional floor under construction is completed.

Besides the patients admitted into the Hospital a vast number is treated at the various out-patient clinics. There are at present 11 out-patient clinics, and the attendance during 1954 was over 195,000. The average daily attendance during the year, was about 550.

Research

Research into the causation, prevention and treatment of tropical diseases has been one of the most important activities of this institution. A brief account of some important contributions by the staff of the School is given below.

Malaria—Treatment of malaria with quinine and various synthetic antimalarials was standardised keeping in view the local conditions. Quinine is the drug of choice in serious malaria. Paludrine resistant cases were reported for the first time in India. Chemoprophylaxis of malaria was successfully carried out in a group of villages for 5 years. Single dose treatment for average case of malaria was worked out, and it was possible to bring down the incidence of malaria to a negligible figure by weekly or even fortnightly administration of a synthetic drug during the malaria transmission season in rural areas. Extensive studies on survey and control of malaria and mosquitoes were also carried out, particularly in the industrial areas. The range of atmospheric temperature and humidity which was favourable for the transmission of malaria (and filariasis) was worked out. The malaria parasite (*P. knowlesi*) of monkey was discovered. It caused virulent infection in the animal and was fruitfully utilised for experimental and therapeutic studies in and outside India. Experimental studies with the malaria parasite of rats (*P. berghei*) revealed interesting results. Presence and distribution of certain enzymes in the nuclei and protoplasm of human as well as animal malaria parasite was shown by the modern cytochemical technique. Clinical research yielded valuable information on the changes in the body fluids, spleen, liver and other organs as well as on the efficiency of newer anti-malarials.

Kala-azar—Sandflies (*Phlebotomus orgentipes*) were incriminated for the first time as the transmitting insect of kala-azar. Flies were infected by feeding them on untreated, antimony-resistant and post-kala-azar dermal cases. Epidemiology of kala-azar in India was worked out and the lethal effect of D.D.T. spray on the sandflies demonstrated. Histopathology of the 'dermal' case was fully described and interesting cytochemical observations on the parasite were made. The diagnostic serum tests, viz., the aldehyde, the antimony and the complement fixation tests were developed. Treatment was standardised, the mortality rate from this disease having been reduced from 90 per cent to about 6 per cent. Other studies included electronmicroscopic appearances of the parasite, electrophoresis of kala-azar serum and polarographic estimations of antimony excretion.

Chronic "splenomegaly"—Important contributions were made with regard to the incidence, clinical features, haematological changes, radiological aspects and possible pathogenetic factors of the condition prevalent particularly in rural areas. Structural changes that are apt to supervene in the liver of these cases were demonstrated by studies of the materials obtained by needle biopsy. Chronic malaria and dietary deficiency are two major factors in the production of majority of cases of chronic splenomegaly and hepatitis

as seen in this part of the country. The medical and surgical treatment was evaluated. Chemoprophylactic suppression of malaria led to a remarkable reduction in its incidence.

Filariasis—The adult form of a filarial parasite of man viz., *Wuchereria* malayi was discovered. Extensive epidemiological observations on filariasis were made. Cytochemical studies have brought to light some interesting features. A large number of indigenous drugs and chemical preparations were tested to see their efficacy in this disease.

Hookworm and other worms—Hookworm survey was carried out in the mining areas and tea gardens. Tetrachlorethylene was used for mass treatment with safety and the best time for giving such treatment was worked out. As a result of extensive trials with various drugs used in indigenous medicine the seeds of *Butea frondosa* (*Palasa*) and *Embelia ribes* (*Biranga*) were found useful in the treatment of roundworms. The shell extract of cashew-nut (*Hijli badam*) proved to be a safe and non-toxic remedy in both hookworm and roundworm infections. Cheapness and ready availability are the obvious advantages of this preparation which may replace imported drugs. The value of mepacrine in the treatment of tapeworms was established.

Dysenteries—Extensive investigations on dysenteries of India were carried out. The importance of treating the associated secondary infection in intestinal amoebiasis was recognised for the first time. Clinical, radiological and bacteriological observations were made on various post-dysenteric conditions such as metadysentery, 'colitis', 'para-sprue', etc. Cytological pattern of *E. histolytica* and intestinal flagellates of man was described.

Cholera—Efforts to improve on Roger's saline treatment with bacteriophage, chemotherapeutic agents and broad spectrum antibiotics were not met with success. Certain antibiotics were found to render the faeces free of *vibrio* rapidly but they were of little therapeutic value. Body fluid and electrolytic changes in cholera were estimated, thus rationalising replacement therapy in different stages of the disease.

Skin diseases—Various skin diseases were systematised. Mycological study of the different types of fungi found in India was carried out, and several new strains were described. Incidence of the superficial mycoses in relation to temperature, humidity, rainfall, age and sex was statistically studied. *Trichophyton rubrum* was isolated for the first time from animals. Oil of babchi (*Psoralea corylefolia*) was found useful in the treatment of leucoderma.

Leprosy—Valuable contributions were made on the factors responsible for the prevalence of the disease in a locality, the different changes in the diseased tissues. Investigations into the resisting power of individuals against leprosy bacilli were undertaken. The usual test employed for this purpose (the lepromin test) was greatly improved and its value in sorting out benign from malignant cases or in judging the ultimate outlook of the case was firmly established. The possible value of B.C.G. (Bacille Calmette Guerin) vaccine in conferring resistance against lepra bacilli to the lepromin negative cases was also studied. The efficacy of various drugs for the treatment of leprosy was investigated. An indigenous preparation, *chaulmoogra oil* and its ethyl ester was extensively used in therapy. Treatment of leprosy with sulphone drugs manufactured locally was standardised.

Diseases of blood—Normal haematological standards for Indians were elaborately worked out. Incidence of Blood Groups in Indians was studied. Valuable contributions were made regarding the causes, diagnostic procedures and treatment schedules of various deficiency anaemias, hereditary anaemias, and other disorders of blood, bone marrow, lymph gland and spleen. The majority of cases of anaemia in India were mainly due to dietetic deficiency often with parasitic infestation, the condition in women being particularly aggravated by pregnancy and repeated child births. Investigations on the nature of reactions catalysed by several enzymes and inhibited by different anticoagulants involved in blood coagulation are in progress.

Nutritional disorders—Extensive investigations on inanition cases were carried out during the Bengal famine (1943) and suitable treatment worked out. Clinical and biochemical contributions were made on various nutritional disorders viz., nutritional oedema, kwashiorkor and infantile cirrhosis of the liver, and investigations are in progress for improved therapy. Certain enzyme activities were determined on liver biopsy materials obtained from these patients; interesting facts have come out. An infant food made of locally available cheap protein sources is under trial.

Epidemic dropsy—Certain features of epidemic dropsy were produced in monkey, rabbit and rat with argemone (*Shialkanta*) oil or alkaloid.

Hydro cortisone was found to hinder development of ascites that frequently follows the injection of the alkaloid in rats. A method was devised for isolation of alkaloids from seeds in quantities. A simple specific test has been devised for detection of argemone in mustard oil. With paper partition chromatography a specific test was developed for detection of traces of argemone oil. Toxicity of "white oil" was demonstrated in animals.

Typhus fever—Presence of endemic typhus was recognised for the first time in India. Clinical features of Scrub typhus as commonly met with in Eastern India were described.

Weil's disease—The causative organism, *Leptospira icterohaemorrhagiae* was isolated in India for the first time. Many cases were subsequently diagnosed.

Histoplasmosis—A case was recognised for the first time in India.

Rat-bite fever—Streptomycin by single injection as well as terramycin (also tetracyclin or achromycin) by mouth was found effective in treatment. It has obvious advantage over the old treatment with arsenical injection.

Tropical Eosinophilia—Interesting facts have come out of the clinical, radiological, experimental and other investigations of this condition which now appears to be widely prevalent with or without asthmatic symptoms. A survey of eosinophilia in groups of rural and urban population is in progress. Efficacy of arsenicals (by injection or orally), anti-histaminics, antibiotics, hetrazan, cortisone, etc. was tested.

Virus disease—A specially equipped laboratory for researches on virus infections has been set up with a mouse colony.

Indigenous drugs—Chemical and pharmacological studies of many indigenous drugs of India were carried out. Usefulness of a number of them was established. For instance, Rauwolfia serpentina—R.S.—(*Sharpagandha*) is useful in high blood pressure and certain nervous disorders, Daemia extensa (*Chagulbanti*) in stimulating uterine contractions and Punarnava in increasing urinary output. The chemical structure of *arborine*, the alkaloid of *Ash-shoura* was found out an dalso confirmed by a direct synthesis of the alkaloid.

Recent chemical analysis of the roots of Indian jungle yams led to the isolation of diosgenin, a substance required for synthesis of steroid hormone such as cortisone.

Pharmacological study of various drugs and therapeutic agents was carried out. It has been recently demonstrated that the hypotensive and sedative action of R.S. is due to the central and peripheral action modifying the effect of the chemical substances normally present and liberated in the system, the crude extract being more potent than any of the isolated alkaloids. The vasodilator effect on renal blood vessels was also shown. Other works include investigations on the protective action of liver extract against X-ray radiation hazards, on the standardisation of digitalis and the experimental evaluation of drugs used in peptic ulcer.

Insectarium—Some species of insects of medical importance are now being reared for experimentation and demonstration. Among them are colonies of (a) mosquitoes responsible for the transmission of malaria, filariasis, and dengue fever, (b) sandflies which transmit kala-azar, (c) fleas which carry the germs of plague and (d) houseflies which are responsible for many bowel diseases from simple diarrhoea to cholera.

During the next five years, it is proposed to provide increase accommodation, equipment and personnel for fundamental and applied researches on the paratitic and other diseases. This is expected to be of value in treatment and control of the major diseases prevalent in the country as well as in training of research personnel.

Bulletin of the School

Since July, 1953 a quarterly Bulletin is being published containing brief reports on researches by the staff, proceedings of the monthly clinical meetings which are open to the medical profession, School news, therapeutic trials of new drugs, special articles and editorial. The annual subscription is Rs. 6/- (post-paid).

(7) Laboratory of the Serological and Chemical Examiner, Govt. of India

DR. K. V. VENKATARAMAN, Director

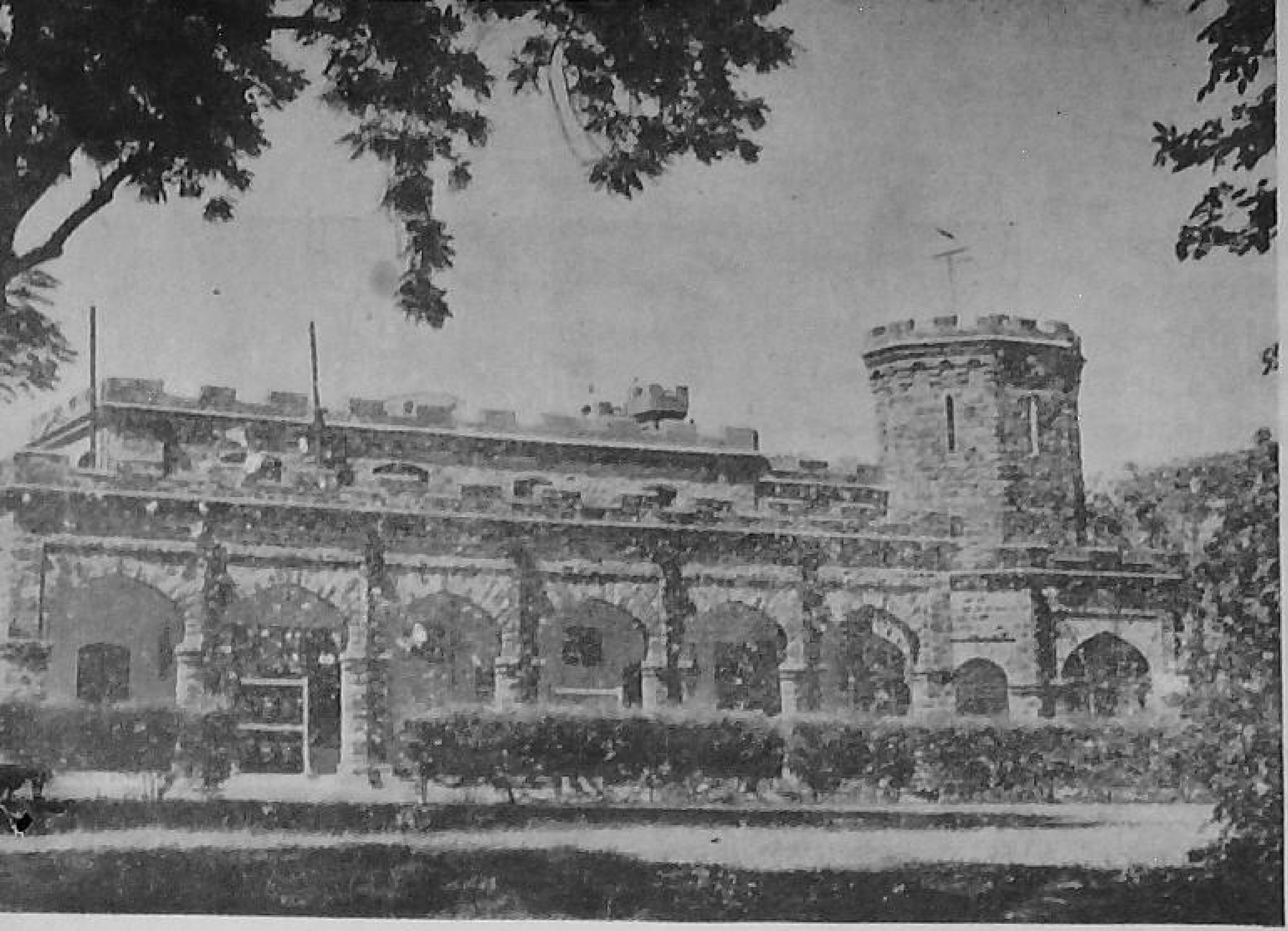
The laboratories of the Serologist and Chemical Examiner to the Government of India are at present located in the School of Tropical Medicine, Chittaranjan, Avenue, Calcutta. A more spacious building designed to meet the special requirements of the work of these laboratories is nearing completion and it is expected that the activities will move into the new building in the course of the year.

Following the demonstration in Europe of the successful application of serologic methods in the investigation of crime, more particularly in the determination of the origin of blood in bloodstains in the first decade of the century, Lt.-Colonel W. D. Sutherland, I.M.S., who had made a special study of this problem was appointed a Chemical Examiner on Special Duty in 1912 to set up an organisation in India to apply these newer methods in criminal investigations. He set up his laboratories in the Calcutta Medical College and very soon the usefulness of these investigations came to be appreciated by the High Courts in the several provinces and in 1914 the designation of the post was changed to that of Imperial Serologist and Chemical Examiner to the Government of India. Close association was established with all the provincial Chemical Examiners and bloodstained materials received by them in the course of their work were forwarded to the Imperial Serologist for further analysis to determine the origin of blood. When the School of Tropical Medicine was opened in 1920, the laboratories were transferred to the School, and the Imperial Serologist was appointed Professor of Serology & Immunology, an association which still continues to the mutual benefit of both the organisations.

The development of satisfactory techniques for the determination of the blood group in bloodstains enabled the department to extend the range of analysis routinely undertaken and at the present time requisitions for the determination of blood group are made in a very large proportion of cases referred to this department. The information obtained by such means is of considerable evidential value in establishing the guilt or innocense of persons accused of serious crimes.

This department functions on behalf of all the States in India and also for the Union of Burma which owing to various reasons has not been in a position to set up special facilities required for the purpose after separation from India. The rough idea of the volume of work undertaken can be had from the figures relating to the year 1955-56 which includes analysis of 31,622 specimens relating to 7,202 cases before the Courts in India.

Besides medicolegal analysis relating to the determination of origin of blood in stains, the department has been actively engaged from its beginning in the application of serologic methods for the diagnosis and control of treatment in many tropical diseases. Serologic tests for syphilis have been routinely done for the medical institutions of the Government of West Bengal. The laboratory has collaborated closely with other national laboratories in investigations on the serology of syphilis and standardisation of serologic tests. A separate unit has been established for the preparation of standardised antigen for the V.D.R.L. tests.



(8) Malaria Institute of India

LT.-COL. JASWANT SINGH.

The Malaria Institute of India, one of the biggest centres for teaching and research in Malaria and allied subjects in the world was founded in 1909 as the Central Malaria Bureau. Sir Rickard Christophers was its first Director. A number of research programmes and surveys were undertaken and a small reference library and a museum were started. This work was interrupted at the out-break of World War I, but was revived immediately after its censsation. In 1921, it was known as Central Malaria Organization. It soon become evidence that in view of the enormous importance of malaria as cause of mortality and morbidity and economic loss, it was essential to have a wider Central Organization on a permanent basis so as to provide a team of skilled workers to undertake systematic research in the various aspects of the disease and to carry on continuous and adequate investigation for its promotion and control. With this object in view the Bureau was expanded in 1927 to form the Malaria Survey of India under I.R.F.A. This name was changed to Malaria Institute of India in 1938 and in 1946 the Government of India assumed entire responsibility of the Institute.

Located at different times in Karnal, Kasauli and Saharanpur, the Institute was shifted to 22, Alipore Road, Delhi in 1938. Southern India Branch at Coonoor came into existence in 1942. An animal house and a laboratory building were added in 1945 and 1947 respectively. A Filaria Training and Field Centre at Ernakulam was founded in 1955. A much needed hostel for students under training at the Institute was added last year. A new building to accommodate the increased staff in connection with the National Malaria and Filaria Control Programmes, workshop and stores, garages, cycle sheds etc. are nearing completion.

Starting from a small staff numbering about 30, the Institute has now about 450 on its rolls including some on research projects financed by the Indian Council of Medical Research, Council of Scientific and Industrial Research, etc. The total budget allotment of the Institute is over Rs. 54 lakhs.

The wide and varied functions of the Institute fall under four broad categories, advisory, research, control and training not only in malaria but in almost all the arthropod-borne diseases. A filaria wing was added in 1952. The Institute is at present coordinating the execution of two national programmes namely the National Malaria Control Programme and the National Filaria Control Programme.

While the need and importance of training personnel required for control organisation were recognized by the World Health Organization in the First and Second Asian Malaria Conferences held in 1953 and 1954, it was foreseen in India as far back as 1910 when the training programme was started at Amritsar. In all, nearly 1350 malaria medical officers, 250 engineers, and more than 850 inspectors have received training in malariology. Training courses in filariology were started in 1955, and 34 officers and 38 inspectors have so far been trained. Ten Officers received training in advanced medical entomology last year. The students have been drawn not only from within the country but from Afghanistan, Burma, Ceylon, China, Indonesia, Iraq, Nepal Protuguese India, Thailand, U.S.A. and U.K., some of these through international organizations like W.H.O.

A 12-week malaria course for medical officers a 12-week course in advanced medical entomology, a 6-week filaria course for medical officers, 10-day course for engineers, 4-week malaria and filaria courses for inspectors are included in the regular programme of the Institute. Additional courses for inspectors in malariology as well as filariology are arranged as and when required.

National Malaria Control Programme has been given the highest priority in health programmes and is designed to give protection to about 200 million people estimated to be residing in malarious areas in the country. It is a unique venture in the history of malaria control in the world because of its demensions. The project which is jointly financed by the U.S.A., Government of India and the State Governments was launched in April 1953. It has been implemented nearly to schedule at an approximate cost of 12 crore rupees.

The total number of units sanctioned so far is 162 and the remaining 38 will be set up during this year when all the 200 units are expected to be functioning. A sum of nearly 29 crores of rupees has been provided in the Second Five year Plan for this purpose. Over 2 crores (upto December 1955) houses have been sprayed giving protection to 10½ crores of people. No other schemes in the plan would appear to reach so many people in their own homes for their immediate social and economic uplift.

It is expected that after the period of the programme, malaria prevalence in the areas treated would be reduced to such negligible proportions that it will no longer interfere with the social and economic life of the people. With this in view the possibility of eradication of malaria in India is being explored.

The National Filaria Control Programme envisages delimiting the extent of prevalence, types of infection, their vectors and for demonstrating control measures. Of the 22 survey units considered necessary to define the problem, 18 have been established. Of the 78 control units deemed sufficient to afford protection to the estimated population of 25 millions at risk, 10 have been established in 1955-56, 35 additional units are due to be established in this year and 30 more in 1957-58. The total cost of the scheme during the first five year plan period has been 19.29 lakhs and 9 crores has been provided in the second five year plan.

A part from training military personnel and manning the antimalaria units during the World War II, the Institute developed spraying equipment, repellents, insecticides and larvicides and directed antimalaria measures in numerous military camps. The Director of the Institute was Malaria Consultant to the Armed Forces in the Eastern Front.

Animal—Expt.—Monkey is being injected.

The evacuation of a vast population from West Punjab, N.W.F.P. and Sind following the partition of the country in the autumn of 1947, and their rehabilitation in various camps in East Punjab, Delhi and Marwar created serious sanitary problems. The Malaria Institute of India was called upon to organize immediately anti-mosquito anti-flea and delousing measures and to train locally recruited staff for continuing the work. Units from the Institute were detailed to different camps and the danger of epidemic insect-borne diseases was successfully averted.

Malaria control in Delhi urban area has been the responsibility of the Institute in Delhi since 1936. The success achieved has been a guide to others. These measures were extended to rural areas in 1946.

The Institute was called upon in 1944 to organize malaria control measure, in the coalfields throughout the country. The organization was handed over to the Coal Lines Welfare Commission in 1951.

Research Work :—

(i) Three different species of malaria parasites in monkeys were isolated and described, and various immunological, biochemical and pathological investigations have since been made in connection with monkey malaria. These strains have also been used for testing a number of indigenous and synthetic antimalarial drugs.

(ii) Researches have been directed towards the testing and development of insecticides, larvicides and repellents, as also towards the improvement of spraying equipment of different typse.

(iii) Systematic investigations have been carried out on mosquitoes and other insects of medical importance. The work of Col. Christopher on Indian anophelines, of Mr. Barraud on culicines, of Dr. Puri on anopheline larvae and of Col. Sinton on phlebotomus have now become classic in literature on medical entomology.

(iv) Other researches include.

(a) Therapeutic value of a number of synthetic and indigenous anti-malarial drugs.
(b) Determination of the source of mosquito blood meals.
(c) Mosquito bionomics.
(d) Naturalistic methods of malaria control.
(e) Maintenance of strains of bird malaria and mosquito colonies.

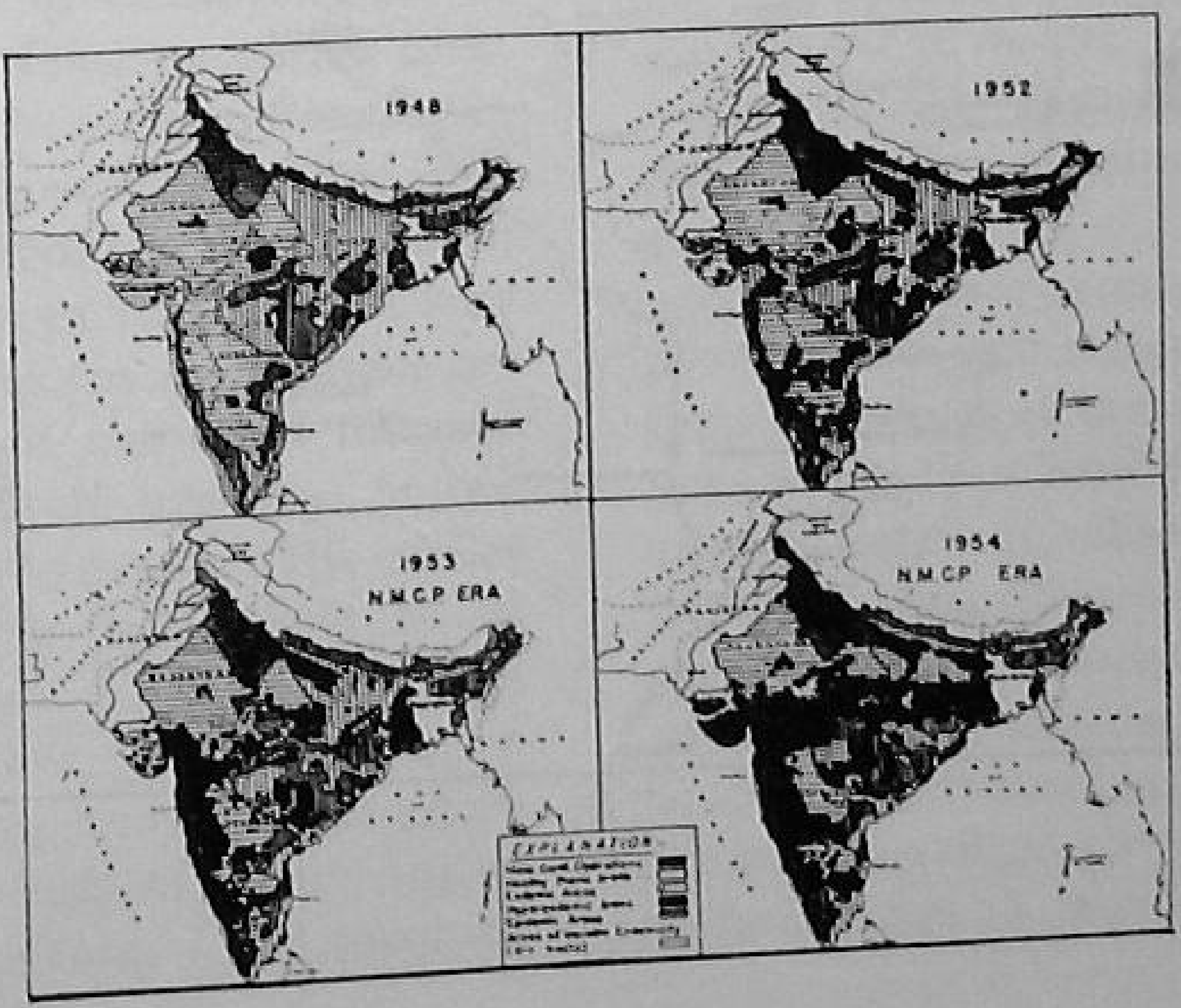
(v) A number of successful therapeutic trials with paludrine were conducted in 1946 in various parts of India.

The Institute has a big malaria museum and a large reference library which are available to workers who wish to consult them.

The Indian Journal of Malariology: which is edited at the Institute celebrated its Silver Jubilee last year. Besides, a number of malaria bulletins, pamphlets, posters and charts are published.

PROGRESS OF ANTIMALARIAL OPERATIONS IN INDIA

Under N.M.C.R. Units



Institute Association, a private body which was founded in 1906 and registered under the Societies Act of 1860. The income of the Association is derived partly from the voluntary contribution, partly from endowments and partly from the revenue accruing from the sale of vaccines. The management of the affairs of the Association is vested in a Central Committee consisting of ex-officio and elected members with the Director of the Institute as its secretary. The minimum subscription for membership is Rs. 5/- which entitles them to the privileges attached to it. The Institute is now self-supporting through its own income.

The objects of the Association are: to make available effective means of preventing the occurrence of rabies, to spread the knowledge of such means among the public, and to undertake research work on rabies or any other disease in so far as the funds permit and the staff of the Institute is qualified to under take such investigations.

The Institute itself as a very well constructed double storied building standing in some 13 acres of beautiful park land, with fine staff quarters and animal houses. It has also a fine library.

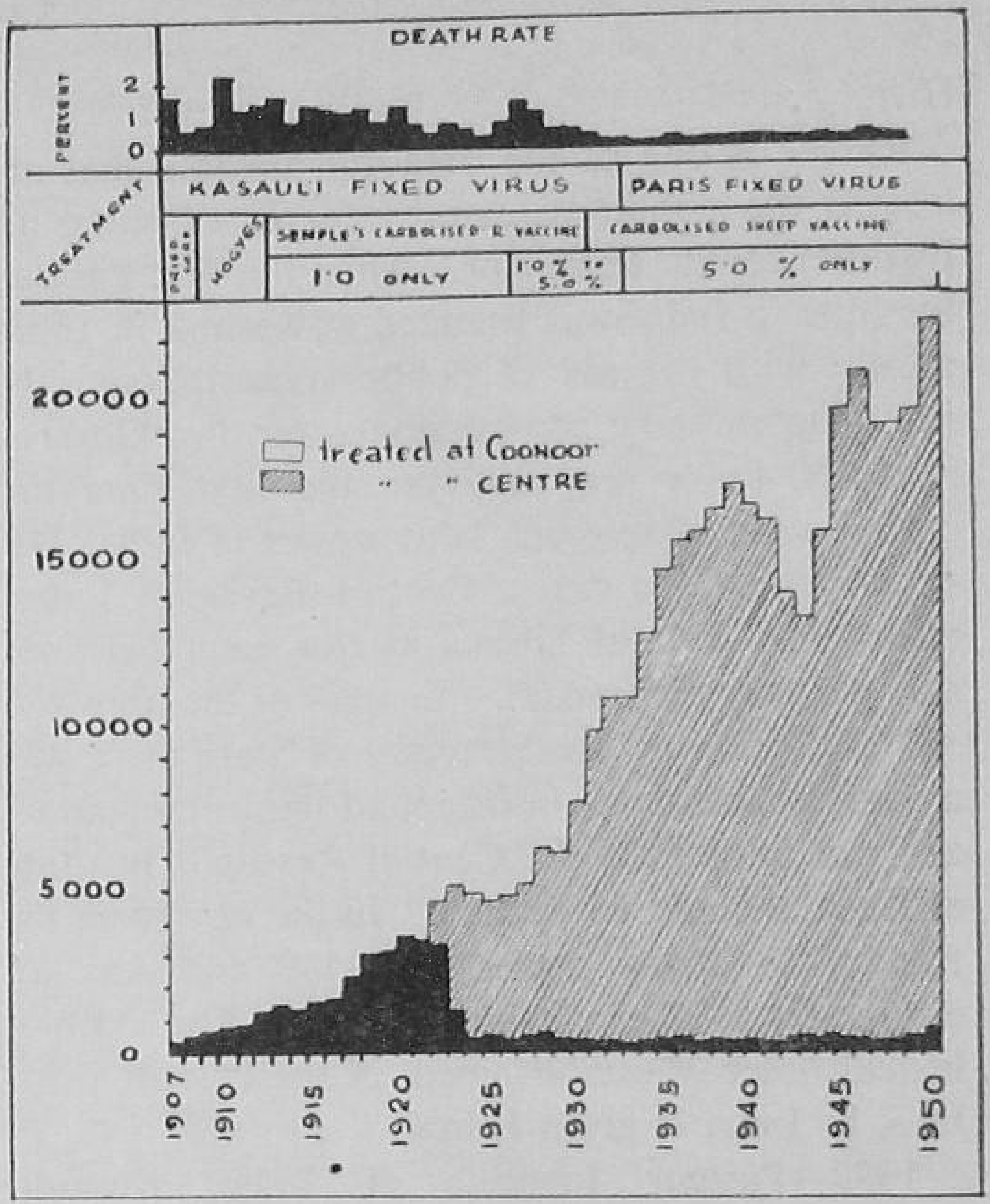
In recent years the Association has gradually undertaken more and more work of a general diagnostic laboratory and in addition to the routine and research activities the Institute has provided facilities for rescords financed by other sources e.g., on malaria, kala-azar, filariasis, entomological and other subjects. Some of these have been temporary and some have become more or less permanent.

The Nutrition Research Laboratories has had its head quarters at the Institutes almost continuously since 1918. The southern India Branch of the Research section of the Malaria Institute of India has been placed at this Institute since 1939.

Antirabic treatment :

Till 1926 only 1% suspension of sheep brain (carbolised sample vaccine) was used and between 1927 and 1932 it was varied between 1 and 5%, but since 1933 only 5% suspension is being used. The total number of patients treated at Coonoor and subsidiary centres since 1907 and the death rates among them are shown in Figure 1. The subsidiary centres number more than 200 in the Madras and neighbouring states. Antirabic treatment is given to the animals.

No OF PATIENTS TREATED AT COONOOR AND SUBSIDIARY CENTRES SINCE 1907 AND THE DEATH-RATE AMONG THEM



Influenza centre :

The newly organised virus laboratory of the Institute is designated as the WHO. Influenza centre in India equipped by the World Health Organisation.

Several Influenza outbreaks in the Nilgiris, Bombay and other places have been studied cases appear almost all throughout the year with partial increase in July-August and September. Evidences of the presence of both Type A and B viruses, have been obtained and the strains isolated are close to PRS and appear to belong to A-prime type. The phase behaviour of the strain are also being studied.

Some other researches which have been recently carried at relate to serological studies in syphilis and leprosy and haemogglutination of fowl cells by staphylococcus aureus.

As the result of close co-operation between the various organisations and enquiries referred to above, the Institute has been a centre for a active research since 1939. The numerous papers of scientific interest and important which have published during the past 46 years indicate the very useful part the Institute has played in medical and health work in South India.

(9) Nutrition Research Laboratories, Coonoor

By Dr. V. N. Patwardhan, *Director*

Nutrition research gained a firm footing in India when the Nutrition Research Laboratories were established in Coonoor by the Indian Research Fund Association (now the Indian Council of Medical Research) in the year 1929 with McCarrison as its first Director. The institution had gradually grown out of a series of researches in nutrition carried out between 1918 when McCarrison started work on beri beri and 1928 by which time his interest had widened considerably covering a wide field in nutrition. His work embraced such different subjects as the nutritive value of foods, the effects of defective diets on animal organisms as a whole and on certain organs and tissues of the body in particular, the experimental production and the determination of the cause of specific nutritional disease. These together with other fundamental and applied aspects of nutrition to which McCarrison directed his researches till his retirement in 1934 indicate the wealth and variety of researches undertaken at the Laboratories. With slight variations in emphasis the work at the Laboratories has concerned with a variety of problems in several of the fields originally conceived by McCarrison as the scope of nutrition researches in India.

When McCarrison commenced his studies, the number of known vitamins was extremely small. Even then McCarrison was clearly of the opinion that nutritional disease in human beings was seldom due to the lack of a single nutrient. His researches were, therefore, mainly directed to the elucidation of the effects of defective diets on animal organism and their influence on the structure and function of the organs and tissues. In fact, it can be said without exaggeration that McCarrison'swork at Coonoor laid the foundation of the science of nutritional pathology, which later became a very valuable means of obtaining insight into the causation of nutritional diseases. McCarrison was also actively interested in two other problems of great importance. His studies on goitre helped to throw further light on its aetiology. The significance of his findings on the role of factors other than iodine deficiency in soil, water and food is being increasingly recognised today. McCarrison's study of urinary calculi disclosed the peculiar incidence of this condition in India. In spite of its association with defective dietaries the problem still remains to be solved.

Dr. Aykryod succeeded McCarrison in 1935 after the latter retired loaded with academic and service honours. McCarrison's fame and that of the Nutrition Research Laboratories as one of the important centres of nutrition research in the world had by then been established beyond doubt.

Aykroyd was at Coonoor for ten years. While maintaining the tradition of his predecessor Aykroyd launched out into the field of clinical and public health nutrition. The work of Aykroyd and his collaborators on nutritional disorders due to vitamin B_2 complex deficiency is of a very high order. His description of infantile beri beri is almost classic. It was also during this period that the movement to study the dietary habits of the people in various parts of India and the incidence of nutritional disorders started and gained considerable momentum under his guidance. A large amount of work on the nutritive value of common Indian foods was carried out between 1935 and 1937, the results of which were published in Health Bulletin No. 23 which has become a popular guide to Indians in the matter of the nutritive value of their food and the planning of satisfactory diets. Aykroyd retired in 1945 and the author of this article succeeded him in 1946.

A considerable expansion of the activities of the Laboratories, with the attendant increase in staff and physical facilities, has occurred in the last ten years.

An idea of the problems which have been investigated in recent years and some of which still continue to engage the attention of workers here can be obtained from the following description.

A considerable number of Indian children of poorer classes and sometimes adults as well suffer from the effects of protein deficiency. Investigations at Coonoor have ranged over the following aspects; aetiology, clinical features, response to treatment with dffierent protein rich foods, biochemical and histopathological features, field surveys for the incidence of protein malnutrition in children, evaluation of vegetable protein for the purposes of prevention, relationship of calorie undernutrition to protein malnutrition, hormonal

disturbances, and pathogenesis of oedema, etc.

Studies on protein include also the nutritive quality of dietary protein particularly of vegetable origin since it is of great importance in Indian dietaries. Subjects such as the essential amino acid composition of prorein, their utilisation by man, his requirements for protein, interrelationship between protein and vitamins can be included under this category.

Other nutritional disorders, viz., nutritional anaemias, lathyrism and those arising out of the deficiency of vitamin A, vitamin B_2 complex, etc., are being studied.

The metabolism of vitamin A and the mode of action of vitamin D are other problems under investigation.

Well equipped field section of the Laboratories carries out diet and nutrition surveys in various parts of India. Its work on the aetiology of night blindness and circumcorneal pigmentation, besides that on protein malnutrition, deserves special mention.

Adequate facilities are also available at the Laboratories for the training of young workers in nutrition and allied sciences. Several universities in India have recognised the institution as a post-graduate training centre, a facility which has benefited many young workers. In addition, short courses in nutrition are held annually.

The advice of the institution is sought on numerous occasions by various local bodies, the State and Central Governments, on matters pertaining to nutrition.

The Nutrition Research Laboratories will shortly move to its permanent home in Hyderabad.

---

(10) The All India Institute of Hygiene and Public Health, Calcutta

Origin :

On tht recommendation of the Royal Commission which visited India in 1860, sanitary commissions were appointed in the major provinces of Bengal, Madras and Bombay for the improvement of health and sanitary conditions in the country. The first chair of Professor of Hygiene was established in the Calcutta Medical Colltge in 1865. With the gradual awakening of the country in the matter of health, sanitation and prevention of diseases the Government of India in 1912 sanctioned grants to local governments for the augmentation of sanitary staff. There was insistence that officers of health have a diploma in public health. This created a demand for the training of such personnel in India. It was on the initiative and perseverence of Sir Leonard Rogers and some private benefactors that the School of Tropical Medicine and Hygiene was established at Calcutta in 1920 and the demand for training was partially fulfilled by creating a Professorship of Hygiene at the School and starting a course for Diploma in Public Health under the Calcutta University. Public health activities expanded rapidly and workers trained not only in general hygiene but also in various specialized branches of public health were more and more in demand. The expansion of the teaching facilities became imminent but lack of finances was the greatest obstacle. The difficulty was finally overcome by Dr. W. W. Carter who offered a sum of Rs. 17,88,000/- on behalf of the Rockefeller Foundation of New York to build and equip an All India Institute of Hygiene and Public Health in Calcutta close to the School of Tropical Medicine, on condition that the Government would meet the recurring cost of staff and maintenance. Thus, the All India Institute of Hygiene and Public Health came into existence as a result of international cooperation in the field of public health. It was formally opened in 1933 by Sir John Anderson, then Governor of Bengal, with Lt. Col. A. D. Stewart, C.I.E., I.M.S. as its first Director.

Location :

The Institute, an E-shaped five storied building, adjoins the School of Tropical Medicine. In association with this School and the Calcutta Medical College it forms a part of the most important medical centre in the East.

All India Institute of Hygiene & Public Health, Calcutta. ~~*Singur Health Centre.*~~

Aims :

The Institute now serves four-fold purposes—

(1) to impart up-to-date instruction in the principles and methods of preventive and social medicine and hygiology suited to combat the numerous public health problems in the country, both at under-graduate and post-graduate levels,

(2) to conduct research directed towards the solution of the varied problems of health and sickness in the country, and

(3) to assess the health conditions prior and subsequent to planning and operation of health and welfare measures and,

(4) to develop practicable and effective methods for utilising the results of pure and applied research in the field of public health, both urban and rural, within the economic resources of the country.

Administration :

Teaching and research in the Institute are based on a close tripartrite collaboration between the Government of India, the Government of West Bengal and the Corporation of Calcutta.

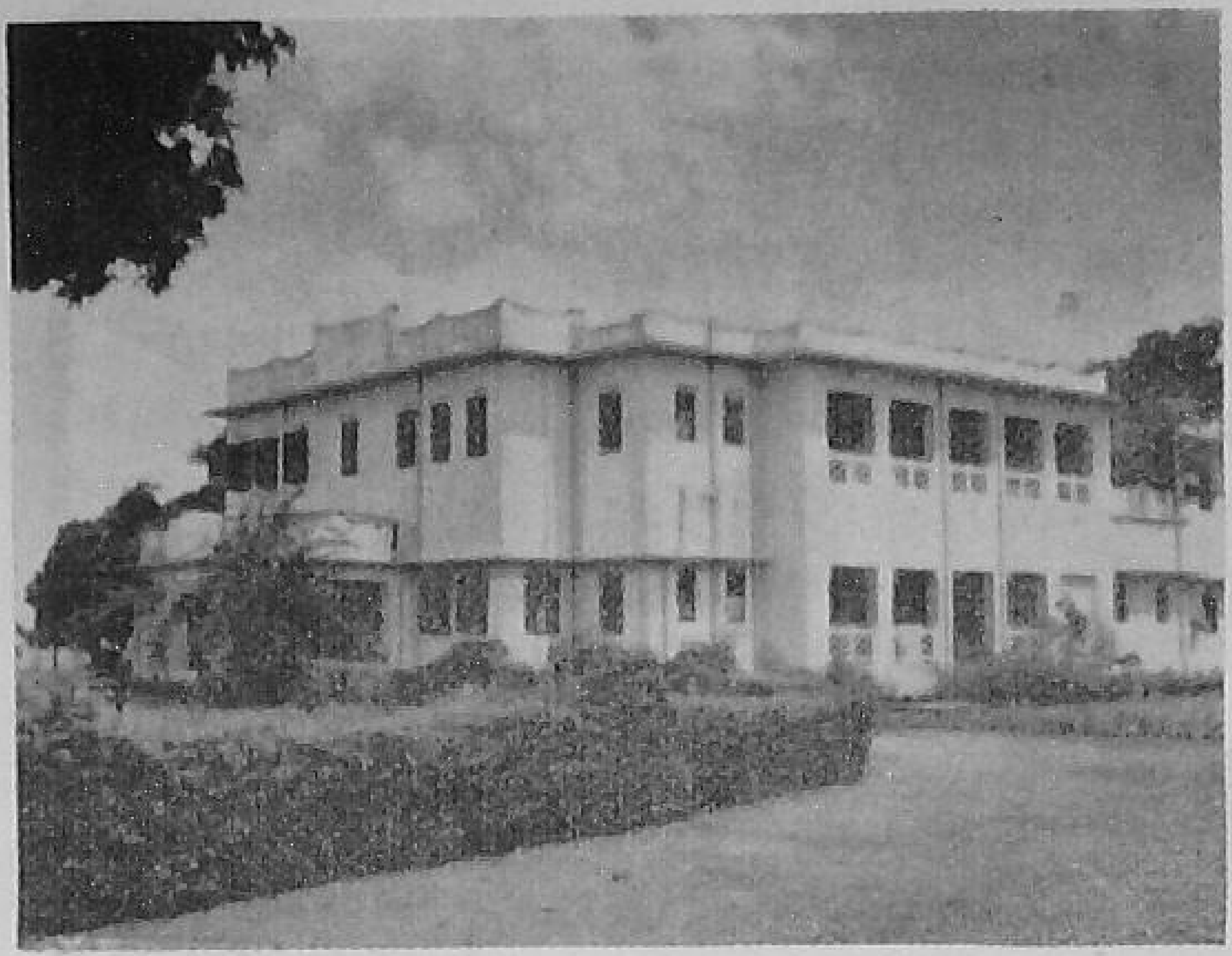
Sections :

Starting in 1934 the Institute functioned for the first five years with five sections. Three other sections have been added within the course of next 15 years. Sanitary Engineering in 1938, Statistics in 1945 and Physiological and Industrial Hygiene in 1950. The Institute now consists of the following eight sections each under a professor assisted by a number of gazetted and non-gazetted technical staff :

(1) Public Health Administration.
(2) Epidemiology.
(3) Microbiology.
(4) Biochemistry & Nutrition.
(5) Maternity & Child Welfare.
(6) Sanitary Engineering.
(7) Statistics.
(8) Physiological and Industrial Hygiene.

Recent Expansion :

In 1951, UNICEF and WHO recognizing the need for establishing a central institute proposed



Singur Health Centre.

to the Government of India that the existing facilities at the Institute should be expanded so that it could serve as an international training centre particularly for the Maternal and Child Health workers of the South East Asian countries. Accordingly, not only the Section of Maternity and Child Welfare has been expanded but other sections of the Institute have also been developed so far as they relate to and contribute towards the maternal and child health work at an estimated cost of Rupees 90 lakhs spread over a period of five years and shared equally between the UNICEF and the Government of India.

In this connection, a new Urban Health Centre has been established at Chelta in collaboration with the Corporation of Calcutta. Additionally, the scope and facilities of the Singur Health Centre have been greatly enlarged in collaboration with the Government of West Bengal and the Institute building extended by one new floor and additional equipment. For the expanded teaching programme the existing staff have been strengthened by both local personnel and foreign consultants on Social Medicine, Pediatrics, Public Health Nursing, Maternity & Child Welfare, Health Education and other specialized fields. The new teaching programme includes subjects like Social Medicine, Health Education, Applied Psychology, Preventive Pediatrics, Psychiatry and Medical Economics in the syllabus for different courses of studies.

Courses :

The Institute offers courses leading up to the following degrees, diplomas and certificates:

A. Post-graduate degrees and diplomas under the Calcutta University:

(1) Degree of Doctor of Science (Public Health—D.Sc. (P.H.).
(2) Master of Engineering (Public Health)—M.E. (P.H.).
(3) Diploma of Public Health—D.P.H.
(4) Diploma of Maternity & Child Welfare—D.M.C.W.
(5) Diploma in Nutrition—D.N.
(6) Diploma in Dietatics—D.D.
(7) Diploma in Industrial Hygiene—D.I.H.
(8) Diploma in Child Health (just piloted)—D.C.H.
(9) Diploma in Health Education (contemplated)—D.H.E.
(10) D. Phil in various constituents subjects like Epidemiology, Microbiology, Nutrition, Industrial Hygiene etc. (Proposed).

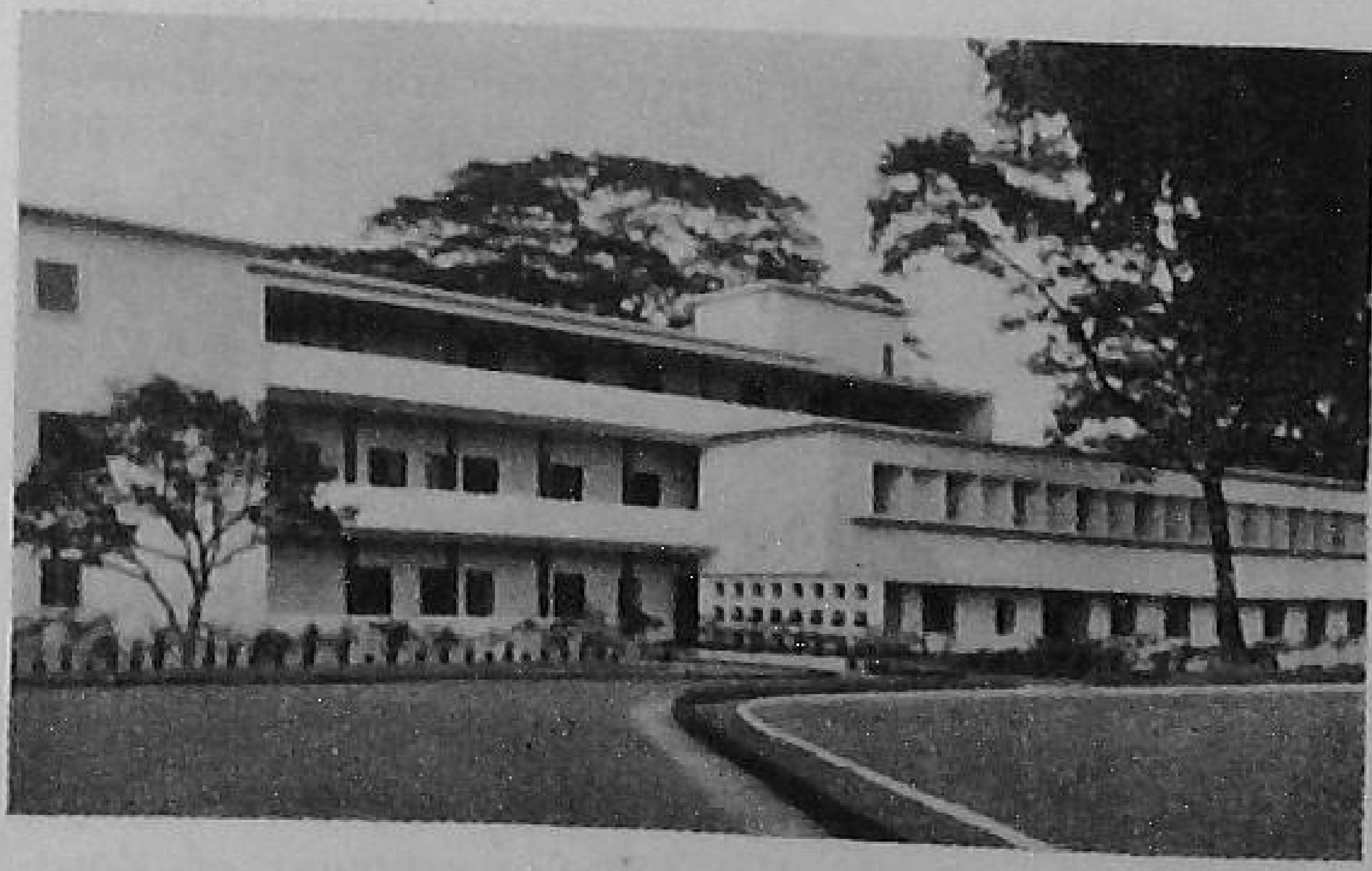
B. Faculty of Tropical Medicine, West Bengal:

(1) Licentiate in Public Health—L.P.H.

C. All India Institute of Hygiene & Public Health Certificate Courses:

(1) Certificate in Maternity & Child Welfare.
(2) ,, Industrial Hygiene.
(3) ,, Laboratory Technique.
(4) ,, Nutrition.
(5) ,, Biometric Technique.
(6) ,, Public Health Engineering.
(7) ,, Public Health Nursing.
(8) ,, Health Education.
(9) ,, Community Project Work.
(10) Certificate Village Water Supply and Sanitation.

The Institute also organises from time to time international training courses, refresher courses and preplacement training courses for various health staff.



Chetla Urban Health Centre.

Institutional teaching facilities :

Different sections of the Institute have been organised to provide the most up-to-date facilities for teaching and research in their specialized fields. The Institute is equipped with eight lecture rooms, a library containing more than 30,000 volumes, a museum, a large auditorium, a cold storage room, a number of laboratories, canteen, media and animal rooms and two electric elevators. Twelve room are presently air-conditioned. There is a hostel for 110 students next to the Institute building and also a new hostel for 90 students at Singur Health Centre.

Transportation is provided for students' demonstration work and for the international staff.

Extra-Institutional training facilities :

(1) Field training facilities are organised at the Rural Health Centre, Singur and at the Urban Health Centre, Chetla.

(2) Clinical instructions in Infectious diseases are arranged in the Nilratan Sarkar and Calcutta Medical College Hospitals.

(3) Special arrangements are made for the study of malaria, tuberculosis, V. D. leprosy, rabies and occupational diseases.

(4) Hospital training for students of maternity and child welfare, pediatrics, etc., are arranged in the Duffering Hospital and Chittaranjan Seva Sadan, Calcutta.

(5) Training in municipal administration is organised in collaboration with the Calcutta Corporation and Howrah Municipality and in state, district and rural administration with the corresponding offices and places under the Government of West Bengal.

(6) Practical instruction in sanitary engineering, industrial hygiene and occupational diseases are arranged through visits to a number of industries of different types in and outside Calcutta.

Facilities for research :

Facilities are available for postgraduate courses for D.Sc. (P.H.) and D. Phil degrees. Casual research students can also conduct research.

Prizes and scholarships :

Scholarships are available for the D.M.C.W. students. The Rockefeller Foundation and Indian Council of Medical Research also award scholarships for postgraduate studies in this Institute. There are also several medals and prizes for the most successful candidates in various examinations.

Research activities of the Institute :

The research activities of the Institute are financed not only by the Government of India but also by the Indian Council of Medical Research, Indian Council of Agricultural Research, occasionally, by the Rockefeller Foundation of New York and other bodies. Among these the Indian Council of Medical Research by its generous grants has enabled almost all sections to carry out many research programes, which otherwise would not have been possible. Within the last 23 years of existence the Institute has contributed liberally to the sciences of medicine and public health. Some of the important contributions follows:

(1) *Studies on cholera with particular reference to :*

- (*a*) endemicity and epidemicity,
- (*b*) differential isolation and standardisation of methods of isolation of cholera vibrios,
- (*c*) chemical antigenic structure and isolation of specific polysaccharides and classification of cholera vibrios,
- (*d*) mutation,
- (*e*) treatment and control measures.

(2) *Studies on plague with particular reference to :*

- (*a*) protein-free media for culture,
- (*b*) chemical antigenic structure and isolation of specific soluble proteins of plague organism,
- (*c*) new serological techniques for identification of plague bacillus,
- (*d*) Ecology of fleas and rates in relation to epidemiology and endemiology of plague,
- (*e*) mechanism of persistence of plague infection during inter-epidemic period.

(3) *Epidemic dropsy with particular reference to :*

- (*a*) discovery of causal agent—argemone mexicana,
- (*b*) complete working of the epidemiology,
- (*c*) physical and chemical tests for the toxic material contained in argemone mexicana used for adulteration of mustard oil.

(4) *Endemic typhus with particular reference to :*

- (a) first successful breeding and transmission of typhud infection in the mite, *T. deliensis.*

(*b*) discovery of the local reservoir of *Rickettsia orientalis* in Rattus rattus.

(5) *Black water fever with particular reference to :* Clarification of etiological factors and successful method of treatment.

(6) *Protein hydrolysate with particular reference to :*

Preparation and successful treatment of advanced cases of starvation with excellent results.

(7) *Blook band and dried plasma with particular reference to :*

Establishment of blood bank and dehydration of plasma and designing of an apparatus in the Institute for plasma drying.

(8) *Studies on food and nutrition of the community with particular reference to :*

(a) diet and nutrition surveys,

(b) analysis of Indian foods,

(c) synthesis Vitamin B_1,

(d) supplementary feeding experiments,

(e) basal metabolic rate,

(f) metabolism and ascorbic acid, carotene Vitamin A, Vitamin B_1, calcium and phosphrus,

(g) role of essential fatty acids in phrynoderma.

(9) *Studies on maternal and infant mortalities and causes of vital losses.*

(10) *Reproductive patterns of Bengali women and the Indian population problem.*

(11) *Registration of vital events.*

(12) *Studies of Indian demography and family planning :*

(13) *Rural sanitation particularly with reference to :*

(a) designing of a sanitary latrine for rural areas,

(b) studies of soil and water pollution,

(c) bacteriological standard of water,

(d) rural water supply.

(14) *Studies on industrial hygiene particularly with reference to :*

(a) environmental conditions in various industries,

(b) treatment of different industrial wastes like straw board and lac wastes,

(c) effect of sewage treatment in excreta disposal methods on the survival of intestinal parasites and the dangers involved in the using the effluents for agricultural purposes as well as a source of river pollution.

(15) *Studies on industrial hazards and occupational diseases :*

(16) *Studies on physiological hygiene particularly with reference to :*

Physical fitness standards, oxygen consumption lung volume and breathing capacity among Indians of sedentery habits, physiological adaptation in different seasons.

(17) *Evolution and standardisation of integrated general health surveys :*

special and sort surveys for assessment of health and socio-economic condition of various types of communities and the country as a whole. [S. C. S.]

---

(11) Central Drug Control Laboratory

Dr. S. C. Seal

Central Drug Control Laboratory.

History:

The Government of India appointed a Drug Inquiry Committee under Col. Sir Ram Nath Chopra in 1930 to go into the question of adulterated and sub-standard drugs both of foreign and indigenous manufacture, which were being openly offered for sale to the public in India and to recommend ways and means by which this menace to public health could be controlled. This Committee recommended that (i) a comprehensive all-India legislation should be passed for the control of importation, manufacture, distribution and sale of drugs (excluding indigenous drugs) and (ii) a machinery should be set up for

the inspection and testing of drugs to ensure conformity to proper standards of purity and strength. For the latter purpose it was further suggested that the machinery should consist of (a) a well-equipped Central Drugs Laboratory with competent staff and experts in various branches of drug standardisation work and (b) Provincial Control laboratories working under the guidance of and close liaison ith wthe the Central Drug Laboratory.

In 1937 the nucleus of the Central Drugs Laboratory under the name—Biochemical Standardisation Laboratory, was established at Calcutta at the All India Institute of Hygiene and Public Health, as a first step towards a more elaborate organisation to be developed after the passing of the Drug Act. In 1940, the Drug Bill was placed before the Legislature and the Drugs Act was passed the same year. In 1945 Drug Rules were drawn up and in 1947 the Government of India, through a Gazette Notification issued order converting the Biochemical Standardisation Laboratory into the Central Drugs Laboratory.

At this time the various sections of the Laboratory were being housed at three different places viz., the All India Institute of Hygiene and Public Health, the Pathology building of the Calcutta Medical College and the Indian Museum. For the last 3 years, all the sections have been brought together in one building of its own at Kyd Street, Calcutta.

Scope and Functions:

(1) To grant certificates of registration for patent and proprietory medicines with undisclosed formulae after carrying out the necessary analysis;

(2) To test imported drugs and declare whether they are of standard quality;

(3) To act as the official referee in matter of disputed analysis regarding the composition of drugs on reference from the law courts and of customs;

(4) To promote, guide and co-ordinate research on drugs and to disseminate information regarding standards of drugs in tropical climates;

(5) To train workers on drug standardisation and drug research; and

(6) To act as the national distributing centre for international standards of drugs.

The Laboratory is now composed of five different sections viz., (1) Pharmaceutical Chemistry, (2) Biochemistry, (3) Pharmacology, (4) Bacteriology and (5) Pharmacognosy. Till recently the laboratory was the only one of its kind for the whole of India and requests for opinion and analysis of drugs from various organisations such as Defence, State Government, Ministries of Government of India etc. were met with. The analysis of any research on drugs requires the employment of agreat variety of modern techniques and most of them have been developed in this Laboratory keeping abreast of modern scientific developments in this field. The assays of hormones, antibiotics and vitamins requiring microbiological techniques are all carried out as a routine measure.

Research activities:

In spite of the heavy routine work research activities and investigations begun in previous years at the Biochemical Standardisation Laboratory was continued. Four groups of research projects were taken in hand viz., (1) investigation in Indian substitute for "Official drugs" and medicinal foods, (2) study of the rate of deterioration of potent drugs under Indian Conditions; (3) improvement in the existing methods of analysis and standardisation of drugs, and (4) general research on drug and allied problems. More than 100 papers have been published on various aspects of drugs standardisation, storage problems pertaining to drugs, life period of activity of deteriorable drugs under Indian conditions, standards and methods of assay etc.

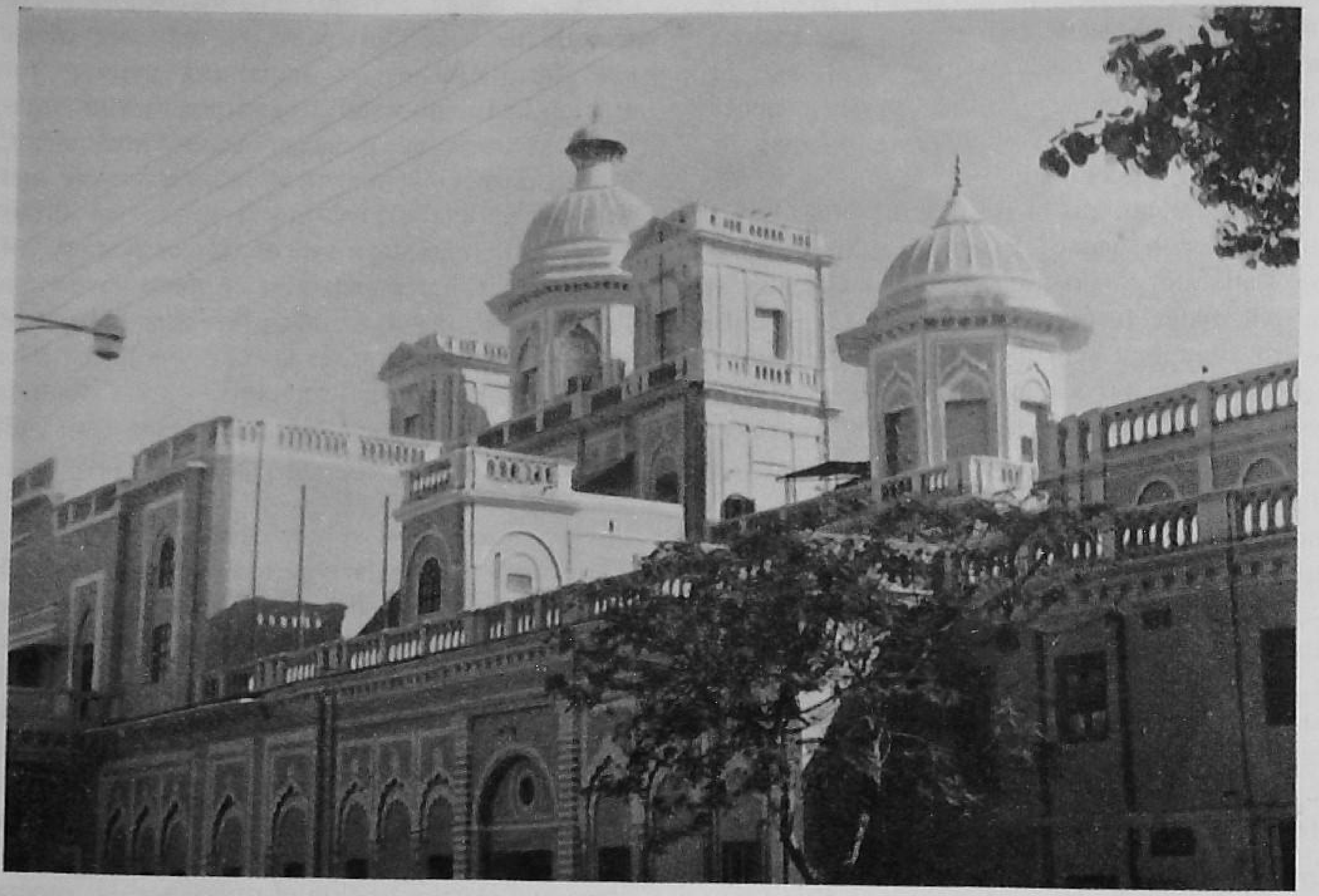
With the establishment of the Central Drug Research Laboratory at Lucknow, a large part of these research activities are now being undertaken in that Institution.

Training of workers:

As this Laboratory was the pioneer on drug testing in all its comprehensive aspects, workers from all parts of India and Pakistan have been deputed for training from time to time. After the successful training over varying periods according to their needs, they are now occupying position of responsibility in State Governments or Medical colleges.

(12) Central Drug Research Institute, Lucknow

DR. B. MUKHERJI, *Director*



The Central Drug Research Institute, the first national Drug Research Institute of its kind in India was declared open by the Prime Minister, Jawharlal Nehru, on the 17th February, 1951 and is now a little more than 5 years old. The Institute which is under the control of the Council of Scientific and Industrial Research, is located in the historical Chattar Manzil Palace on the West bank of the River Gomoti, opposite the university of Lucknow.

Scope of work:

Drug and pharmaceutical research, comprehensively considered has very wide scope in India. It extends from systematic scientific study of the crude drugs, that have been in use in indigenous systems of medicine for centuries at one end, to the highly developed field of synthetics and anti-biotics at the other. Nearly 35 per cent of the drugs listed in the British Pharmacepoeia are native to India and substitutes for a large number of others can probably be found. Much of India's indigenous drug resources are still unexplored and unexploited. On the other hand, India has been spending progressively more and more money for drugs, e.g. the import expenditure in 1951-52 reached the high figure of 15.15 crores, the major part of which was spent for antibiotics, anti-malarials and sulphadrugs. All this is a great drain on our resources and this can be stopped if we manufacture drugs in India sufficient to meet the demand. This Institute has enough scope to organise a systematic work in this field, to study Indian drugs and especially of those drugs which might be useful in the treatment of diseases most commonly found in this country.

Functions of the Institute:

The essential functions of the Institute are:

(i) Promotion of drug research in general.

(ii) Testing and standardisation of drugs discovered in this Institute and providing expert advice for further research, development and production of these drugs.

(iii) Offering af facilities and advice to acientists, universities, appropriate institutions, industrial concerns and others who may not be in a position to carry our or complete investigations on matters relating to drugs.

(iv) Organisation of controlled clinical trials of drugs in hospitals and clinics.

(v) Dissemination of scientific knowledge relating to drugs.

To achieve this objective the Central Drug Research Institute has started work on the following lines: —

(1) Preparation of drugs.

(2) Study of action of drugs, both of indigenous and Western Materia Medica, on biological systems.

(4) Study of the disease itself from the point of view of its causation and treatment.

Organisation:

In order to discharge its functions efficiently, the Institute has the following divisions: (1) Botany and Pharmacognosy, (2) Medicinal Chemistry, (3) Biochemistry and Biophysics, (4) Microbiology and Parasitology, (5) Pharmacology and Chemotherapy, (6) Experimental medicine.

The addition the above scientific divisions there are several ancillary sections and services as given below:

(a) An Intelligence and Statistical Section comprising of a Central Library and Bibliographical Research Unit, (b) A general Section to look after the purchase of apparatus, equipment, chemicals, their storage and maintenance etc., (c) A workshop for the fabrication of instruments, special glass apparatus and small type of pilot plants etc., (d) A well-designed animal house, (e) A Museum of crude drugs, finished pharmaceuticals, biologicals, illustrative charts, diagrams, filmstrips, (f) An Administrative Section and (g) A cafetoria and a Recreation room.

The Institute also entertains, visiting workers, research scholars as postgraduate workers under Fellowship schemes.

Recent Activities:

Investigation on the discovery of new drugs can only be achieved through team-work and so the various divisions in this Institute have been equipped in such a way that all the different stages in the development of a drug problem can be studied in their respective phases by experts belonging to different scientific diciplines. The drugs that are being prepared here consist of (a) Plant drugs, (b) Synthetic drugs, (c) Antibiotics and (d) Biological preparations.

(a) *Plant drugs:*

The Institute has focussed its attention on about two dozen medicinal plants reputed to be efficacious in maladies commonly occurring in India. Chief among them being:

(i) *Rauwolfia serpentina:* (Sanskrit: AHIMARDINI. Hindi: Sarpagandhi, Chotachand). Work on this plant has led to the isolation of two more principles, other than the ones reported so far. Animal expperiments have shown that the crude extract consists certain unknown principles which are responsible for their total action. The nature of these principles is under study.

(ii) *Psoralea Corylifolia:* (Hindi—Babchi: Experiments conducted so far with the preparations of this plant have shown encouraging respopnse in Leucoderma (Sweti or Dhabal).

(iii) *Coccinia Indica:* (Hindi: Kundru): This plant is reputed to be efficacious in Diabetes. Work on Rivea Cuneata (mysore-Kallangida) is also in progress in the field of Diabetes.

(iv) *Cissampelos pereira:* (Hindi: Parhi, Kashmiri-Zakhimi-hayat) is a plant reputed to be efficacious in intestinal tuberculosis. Preliminary work showed that the two principles isolated from this plant had no effect in tuberculosis. This drug can be used as a muscle relaxant in surgical cases. Commercial exploitation of the same is in progress.

(v) *Anagallis arvensis:* (Hindi—Zonkhmari): In the indigenous system of medicine it is used in the treatment of gout, dropsy and as a fish poison. Observations made so far have indicated that it is a suitable source of drug for treating tapeworm infections.

(vi) *Milletia pachycarpa:* (Beng.: Bishloti): It is a large climber indigenous to India and is considered to be a fish poison. Extract of the seed of this plant has been found to a potent insecticides. Work is in progress.

(vii) *Phyllanthus emblica* (Amla): This constitutes one of the principal ingredient of many of the famed Ayurvedic preparations like chyavanaprash. Some 13 different and easily separable 'tannins' have been isolated so far.

In addition to the above on which some significant progress has been made, work on medicinal plants like Stephania glabra (Gindaru), Achyranthes Aspera (Latjir) Ailanthus malabarica (Gugguldhoop), Melodinus monogynus (Assam: Sadul Kou), Nardostachys jatamanshi (Jatamanshi)

Centipeda orbimlaris (Nacflhikni). Cassia absus (chaksu) Caesalpinya digyna (Vakeri), Euphorbia acaulis (Banmulti) Picrrhiza kutki), is in progress.

(b) *Synthetic Drugs:*

Work has been taken up for the synthesis of compound that may be useful in the treatment of tuberculosis, leprosy and amobica dysentery. A series of compounds have been synthesised and preliminary work both in the laboratory and a few on the clinical side has shown considerable potency in a number of compounds in tuberculosis and leprosy.

(c) *Antibiotics:*

As soils are rich in microbiological flora, a large number of local soil samples are being intensively screened. One sample has yielded an antibiotic particularly active against the organism causing Dysentery. It may perhaps be possible to develop some newer antibiotics from Indian soil miscroorganisms and to simultaneously produce Vitamin as by product, which is of great economic significance and public health importanc.

An alternative source for Vitamin B_{12} from soil microorganisms is being made. A few organisms appear to produce Vitamin B_{12} in measurable quantities.

(d) *Biological preparations:*

Side by side with the preparations of plant and synthetic drugs, work is also in progress with regard to important biological preparations like lecithins & nucleic acids from plant sources. Work in this Institute on pulses like chana, urd, mung etc.,h as resulted in the isolation of lecithins from urd & Arhar—1.6% and 1.5% respectively.

Some of the Enzymes have been prepared from bacterial sources also and work on the preparations of hormones has also been taken up.

2. *Study on the action of Drugs:*

Animal metabolism is a sort of chain reaction in which various enzymes constitute the links. Drugs become effective by interfering with a particular enzyme or enzyme system. A detailed investigation has therefore been taken up on the action of antibiotics on various enzyme systems. Also for a rational approach to the chemotherapy of infections, studies have at present been focussed on cholera and plague.

3. *Study of Disease :*

Studies are in progress on Tropical Eosinophalia a condition which simulates T.B. and resists effective trtatment. The evidences collected so far seem to indicate the nature of the causative organism as probably a Virus. Work is in progress to validate this assumption.

Leucoderma, the dreaded skin disease, is also being studied. In addition to what has already been reported a hormone preparation provisionally named 'PITMELANIN' or 'INTERMEDIN' is being used in conjunction with X-rays in Leucoderma. An encouraging response has been noted.

Some progress has been made in the understanding of the complicated problem of high blood pressure and interesting results pointing to newer significance of faulty carbohydrate metabolism in diabetes and its control by sex hormone have also been reported from the Institute.

4. *Testing of Drugs:*

The work of testing of various drugs prepared in this Institute from difftrent angles is being actively pursued. The results will be of very great help in determining the structure of chemical compounds that would be more effective for fighting a particular infection.

With a vitw to help the public and industry this Institute, though very much handicapped by the absence of an Analytical Wing, is still rendering assistance in analysing some limited samples for which adequate testing facilities do not exist in any other place in India. The position will ease with the establishment of this wing which has been accepted in principle, in the near future. Organised trials of drugs sent by various agencies are also being taken up.

5. *Dissemination of scientific knowledge:*

The Information Section is fulfilling this venture by organizing symposia, popular lectures and by popular articles in the lay press. Radio talks on the researches being carried out in the Institute have also been given from time to time.

6. *General:*

The first volume of the Indian Pharmaceutical Codex, the first work of its kind in India giving analytical information on indigenous drugs useful to doctors, drug manufacturers, research workers and laymen, has been published under the authorship of Dr. B. Mukherji, Director of this Institute. The Codex is on the lines of the BPC and USD and consists of 190 monographs on indigenous drugs, mostly vegetable, but also of animal and other origin and is of use to all systems of

medicine in this country.

To facilitate the judicious utilisation and assist the use of toxic plants from scientific, toxicological and economic points of view, a pamphlet in two parts under the title 'Poisonous seeds of India' has been published in the Bombay Nat. His. Soc. Journal.

Synonyms, habits and uses of most of the well-known medicinal plants have been compiled in the form of a brochure and is being published under the title "Glossary of Medicinal Plants of India."

---

(13) Central Food Technological Research Institute, Mysore

Dr. B. Subramanyam, Director

The Central Food Technological Research Institute was established in Mysore in the year 1950 on the basis of the recommendations made by the Industrial Research Planning Committee and the Food Industries Panel of the Government of India. The Institute owes its location in Mysore to tht munificence of the Government of Mysore who placed the imposing Cheluvamba Mansion with an extensive estate at the disposal of the Council of Scientific and Industrial Research, and it was formally inaugurated in October 1950 by Shri C. Rajagopalachari.

The Institute has facilities for fundamental and applied researches and deals with different aspects of food science and technology. The work of the Institute is organised through ten Divisions. The Scientific Staff of the Institute is nearly 150 together with about 200 under other categories. There are special sections dealing with Tea, Coffee and the Fruit Products Order besides schemes supported by organisations like the Indian Council of Medical Research and the Indian Council of Agricultural Research. The broad aims of the Institute are to assist the numerous food processing industries in their technological problems, and to be of service to the public or the common man. Nutritive values and palatability of foods are of as much interest to the consumer as the cost and investigations bearing on these aspects form an important part of work of tht Institute.

When the Institute started functioning, acute distress gripped the country and investigations at that time were naturally concerned with finding alternative sources of food. Methods were evolved for converting coarse and second grade articles of food into acceptable forms of first grade food, and an important contribution in this field was the production of grain substitutes based on cheap indigenous materials which are deficient or otherwise unacceptable, but when blended would produce a nutritionally balanced product. A procedure was worked out for using blends of tapioca and groundnut flour now known as MYSORE FLOUR with suitable binders which could be extruded into grains of rice shape. Besides the cheapness, this technique provides an elegant method for making grains which are two to three times as nutritious as natural rice. A notable aspect of the work on synthetic rice is the fact that the research behind it attracted world-wide attention and progressive countries took advantage of our findings.

Protective Foods:

Nutrition surveys conducted in different parts of India have shown that the diet of a large section of our people is grossly deficient in protective foods like milk, and suffers from deficiency of potein, certain vitamins and minerals. Considerable amount of malnutrition is also prevalent among expectant and nursing women and children belonging to the poorer classes of the population. In view of this wide prevalence of malnutrition and under-nutrition, the Institute has evolved processes for several types of concentrated and protective foods. In evolving such products factors such as the availability of raw materials, ease of processing, shelf life and above all, the cost of production have been borne in mind. A caseinate product, which has already been released to the industry under the name of SUSTOVITA is a cheap, easily dispersible high protein food, fortified with minerals and vita-

Chelubhamba Mansion.

mins. The therapeutic value of the product has been established by extensive feeding trials with patients suffering from a wide variety of wasting diseases.

To serve as a good supplement to the diet of malnourished children and to replace a greater part of milk in their diet a low cost malt food has been developed from the readily available raw materials which provides a cheap food supplement to weanling infants and children. The product is prepared by suitably blending a mixture of fine jowar malt with specially processed groundnut flour, skim milk powder and cane sugar and fortified with essential minerals and vitamins. The product reconstitutes easily in hot water, yielding a pleasant and nutritious drink and is expected to cost not more than Re. 0-12-0 per pound exclusive of container. The therapeutic value of the product has been established by extensive feeding trials with children which showed that supplementation of their diet with one ounce of the material daily, produced a marked improvement in their growth and nutritional status.

The other is the Indian Multipurpose food which contains over 40% protein and consists of a blend of specially processed groundnut flour, roasted pulses and fortified with essential minerals and vitamins. Bulk for bulk, the multipurpose food supplies about twice as much protein, 3-5 times as much vitamin B, riboflavin, and calcium as the common pulses. Two ounces of the product valued at one anna and a quarter will supply the daily requirements of minerals and proteins for adults, and half the requirements of children. The product is available in three forms: (i) seasoned with salt, spices etc. for use as a substitute for dhall in soups and savoury preparations, (ii) unseasoned for use in porridge, puddings and sweet dishes? and (iii) with skim milk powder. The products are primarily intended to be used as a supplement to the diet of children, expectant and nursing mothers and other vulnerable sections of the population. The formula containing skim milk powder can also be used as a supplement to the diet of weanling infants and convalescents. Feeding experiments on children have shown that supplementation of the diet with one ounce of the product (without milk powder) produced a marked improvement in the growth and nutritional status as compared with the control not receiving the supplement.

There is now a program to set up several large factories in different parts of the country for the manufacture of this product. More recently, a similar composition has been successfully incorporated into biscuits. Recently, the Prime Minister was pleased to donate one lakhs of rupees from his Relief Fund for the manufacture and distribution of these biscuits to children in the flood and distress affected areas in the country. It is hoped that there will be an increasing production of such fortified products by the Biscuit Manufacturers in the country.

Infant Foods :

The Institute has standardised conditions for the manufacture of a high class Baby Food based on Buffalo milk which is a new approach. The curd tension of the reconstituted product is very low. Steps are being taken to help in the large—scale production of this humanised baby food in the country. Baby foods have also been prepared from strained fruit pulps. Conditions have also been standardised for the preparation of malted foods with and without added milk as

Pandit Nehru and Sri V. K. Krishna Menon, examining multipurpose proof.

well as chocolate flavour beverages.

Vegetable milk curds:

Investigations conducted at the Institute have shown that Soyabean and groundnut cannot only be processed but suitably fortified and deodorised to yield attractive and palatable products like curd and buttermilk, which could be used in place of the animal milk products. These products have been demonstrated on a large scale and have been found ready acceptance.

Storage and preservation of food materials:

Seasonal shortages and glut of grains, vegetables and fruits are a common feature. Gluts result in enormous wastage and it has been found that cold storage is an elegant and inexpensive method of storage. Conditions have been standardised for nearly every fruit and vegetable produced in the country and the information made available to the industry. Considerable amount of work has been done on the efficient storage of grains. Simple and effective methods of fumigation and new compositions of insecticides have been evolved. Some of these methods are now being commercially applied.

Assistance to Food industries:

The problems of the fruit and vegetable preservation industry are continually under investigation and the Industry is being advised and assisted to improve the quality of their products. A special unit attached to the Division of Fruit Technology is concerned in testing samples of all the fruit and vegetable products in the country. This has not only protected the interests of the consumers but also has helped tremendously in improving the quality of fruit and vegetable products manufactured in the country. Investigations on Coffee and Tea cover the establishing of standards, detection of adulteration, improved methods of extraction and related problems. Some of our findings have already been implemented by the Coffee Board.

An expanding industry to which the Institute has made significant contributions is the Sago Industry which provides employment for over a lakh of workers. On the basis of investigations, the Industry has been advised on improved methods for the manufacture of the product.

Development of laboratory processes is the work of the Division of Food Engineering. In addition to assistance in Pilot Plant and semi-large processing, the Division has also designed and fabricated several items of food processing equipment which has saved substantial sums of money.

Parboiling of paddy:

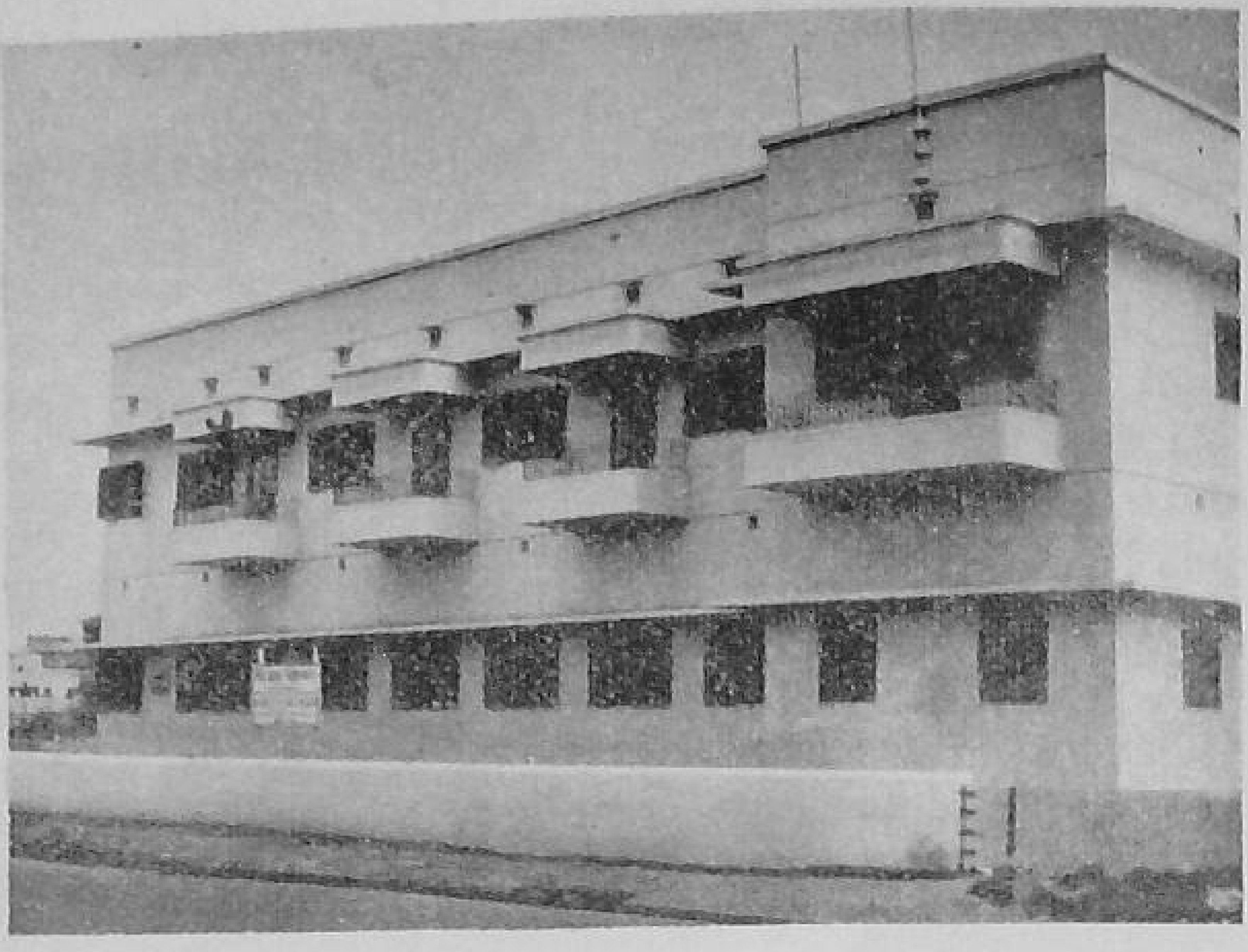
The technical and nutritional advantages of parboiling consist in the greater case of shelling, reduction of breakage during milling, better keeping quality and a 5-10 per cent increase in the yield of head rice. The nutritional advantage consists in the retention of vitamins in the grain in spite of polishing the rice.

Commercially parboiled rice is generally of poor quality because it has an undesirable fermented off flavour, does not swell to the maximum extent during cooking and the cooked rice stiffens on standing.

As a result of extensive investigations, a modified method has been worked out which gives a superior product without sacrificing the yield of rice. The modification suggested is also simple, and large-scale trials have shown that the procedure can be adopted with the existing facilities in rice mills. The product is free from objectionable odours, characteristic of commercially parboiled rice.

The results of our investigations are carried to the industry and to the people through an extensive publications programs in English and in different regional languages, besides participation in Exhibitions. Under the Second Five-Year Plan, it is proposed to have a well-planned extension service in co-operation with the Community Projects and the National Extension Service Blocks for a wider dissemination of the results of the work of the Institute.

(14) Institute of Child Health, Calcutta



DR. K. C. CHOUDHURI, *Director*

The "Institute of Child Health" was established in 1956 by the Institute of Child Health Trust, Calcutta, A Society founded in 1953 and registered under the Societies Registration Act XXI of 1860. The Institute has been established to fulfil a fourfold purpose, viz.:

(1) To promote health and prevent illness in children.
(2) To cure illness in children.
(3) To train medical and nursing personnel.
(4) To carry out research on the problems of child health.

The "Institute" is an academic body and recognised by the University of Calcutta for training post-graduate students in Child Health.

In the development and promotion of public health, institutions devoted exclusively to children have played a major role in more advanced countries of the world. In India, no such institutions, run along modern lines are available with facilities for therapeutic and prophylactic services, and for research and teaching; despite the fact that the country has the second largest child population in the world—150 million souls—and one of the highest infant mortality rates.

The child in its totality will be considered, including its emotional, intellectual and physical needs. The stress will be on the management of the child as an individual having a disease and not on the treatment of illness in children.

The special advantage of having such an organisation lies in the fact that children are born more or less healthy and if they could be kept in this state there will not only be less necessity for adult care, but they will grow up to be healthier and happier men and woman.

It is a Community Health Centre and not a hospital only; that is, it is concerned with health education, the promotion of health, prevention of disease, treatment of illness and the advancement of knowledge in child health. This is the first post graduate medical college in the country dealing with higher studies in pediatrics. The Institute is prepared to offer technical assistance to any organisation working along similar lines and would co-ordinate its services in such a manner that there would be no overlapping with those of other organizations. Such an institution, offering post-graduate courses in child health as well as research facilities, in the country itself, where workers will have direct experience of the diseases and other abnormal conditions native to India, is obviously of much greater value than similar institutions abroad, where conditions are foreign to those of this country.

The objects outlined above will be achieved by the establishment of the following services:—

(i) Institutional services comprising (a) a hospital and (b) a convalescent home.
(ii) Semi-institutional, comprising (a) a kindergarten, (b) a creche and (c) school health service.
(iii) Ambulatory, consisting of (a) an outpatient department, (b) welfare centre, (c) child guidance clinic, (d) mothercraft classes, (e) domiciliary services, etc.

(15) Indian Institute for Biochemistry and Experimental Medicine

(Formerly Indian Institute for Medical Research)

J. C. RAY,
Director

The Indian Institute for Medical Research was inaugurated as an All-India Institute on January 1, 1935, with the support of eminent scientific and public men like Acharya, P. C. Roy, Rabindranath Tagore, Madan Mohan Malaviya, Nilratan Sircar, A. R. Dalal, C. V. Raman, Gaganvihari Lal Mehta and others, who signed the first appeal for funds. It was the first non-official medical research institution in this country. It has worked unremittingly for the last 20 years with the hope as expressed by our Prime Minister Shri Jawaharlal Nehru that when India is free, the Institute will receive State help and State recognition.

As far back as in 1933, workers in India had been feeling the need for a Research Institute where original investigations in medical sciences could be carried out and the problems bearing on the promotion of national health could be intensively studied.

Throughout the last 20 years, the larger part of which was spent under the British rule, the Institute has struggled to maintain its flow of work under severe financial handicaps.

Amids these serious difficulties, the Institute has lived for the last 20 years and has made many original contributions in medical immunobiological, biochemical, nutritional in both fundamental and applied aspects. It may be mentioned that most of the scientific contributions from the Institute are of an original nature. The Institute has been able in this manner to gain an acknowledged position in the field of medical research, inspite of very meagre resources at its disposal. The present modest equipment of the Institute did not permit more deepened and extensive work and frequently was a handicap on current research. The workers of the Institute, therefore, were compelled to limit their research to the restricted facilities that the Institute could provide.

Considerable changes took place this year, 1956, regarding the financial position and administration of the Indian Institute for Medical Research. The Council of Scientific and Industrial Research took it over, with the name changed to Indian Institute for Biochemistry & Experimental Medicine.

The CSIR has nominated an Advisory Committee to advise the Council regarding development and programme of work of the Indian Institute for Biochemistry & Experimental Medicine.

The research work carried out at this Institute is being regularly published in scientific journals. The Institute is publishing the 'Annals of Biochemistry and Experimental Medicine', which is now a standard journal for publishing research work in Biochemistry and Experimental Medicine in this country and is regularly reviewed abroad. The Indian Council of Medical Research has sanctioned one Assistant Research Officer and one Research Fellow for two research schemes at this Institute. Various research projects are in progress.

CONTRIBUTIONS

The activities of the Institute ramifiy through diverse channels spreading to various disciplines of Biological Sciences.

BIOCHEMICAL AND NUTRITIONAL RESEARCH in Bengal in its fundamental and practical aspect was first initiated by this Institute. A large number of common Indian foodstuffs were investigated specially with reference to their contents of proteins, vitamins and minerals. The metabolisms of vitamins in human and experimental animals with particular attention to their anti-infective properties were also worked on and extensive investigation as to the nutritive values of common dietaries, with regard to their requirements during pregnancy and lactation, was also carried out.

RESEARCH ON CHEMISTRY, IMMUNOCHEMISTRY AND CHEMOTHERAPY included studies on the

physical behaviours protozoal bodies in the presence of immune sera and also the kinetics of toxin anti-toxin floculation. In addition, various pharmacodynamic fractions of cobra and Russel viper venom were isolated, purified and their effect on cell functions studied. The applicability of the venoms in human diseases was attempted and the mode of their pharmacodynamic actions was investigated. Naturally occurring anti-bacterial substances present in common vegetables like garlic were isolated and the active principle was studied.

RESEARCH ON BACTERIOLOGICAL PROBLEMS at this Institute concerned the investigations regarding typhoid toxin and its effect, alone or with other bacterial associates. Oral immunisation against typhoid was extensively investigated and its conditional reliability was upheld. Investigation of cholera and its vibrio, the enzymes in choleric stool and their toxicity, role of bacterial associates in the manifestation of cholera and the cure, had all been carried out. Deletarious effect of our unbalanced dietary habit to chronic bowel disorders prevalem in this country was demonstrated.

IMMUNOBIOLOGICAL AND PROTOZOAL INVESTIGATIONS covered diverse field ranging from studies on immunity in Malaria, to the intricate process of allergy and its manifest disorders. IMMUNE RESPONSE IN MALARIA was extensively worked on and its possibility as an aid in diagnosis and in assessment of therapy was probed into. Malaria vaccine was given a field trial. SUCCESSFUL CULTURE OF LEISHMANIA ON SOLID MEDIUM was an unique achievement of the Institute leading to an effective vaccine therapy in intractable derma parasitization.

INVESTIGATION ON AMOEBA, its metabolic characteristics and dependance, was extensively carried out with one aim in view as to a successful culture of the protozoa free of bacterial association.

Works on IMMUNOLOGICAL TECHNIQUES in gonorrhoea, for its diagnosis and as an index of cure, and IMMUNO-PROPHYLAXIS with soluble bacterial antigens, against common communicable diseases, were initiated decades age and considerable progress thereon was made. Mechanism of bacterial allergy as embodied in tuberculosis was studied through the characterisation of 'urinary proteose' present in tuberculous urine. Its antigenic specificity akin to tuberculin has opened up a now line of approach towards the understanding of this endogenous allergy.

To mention some, the reputed workers who happened to be associated with the research activities of this Institute are Drs A. C. Ukil, H. Ghosh, B. C. Guha and B. N. Ghosh.

(16) Central Food Laboratory

DR. A. R. SUNDARARAJAN, *Calcutta*

In the early twenties it was recognised in India that there was need for prevention of adulteration of foods as one of the measures to protect health of the people. Since health was a concurrent subject, each of the Provinces in India enacted its own laws and rules. The specifications for foods laid down some times varied from one state to another and occasionally this led to difficulties in prosecution. The type of adulteration practised varied from one province to another and the emphasis in the prevention of food adulteration rules therefore also varied accordingly. Further, while some of the provinces had well equipped laboratories and personnel, a few of the others did not possess the proper machinery to deal with the problem effectively.

Due to the short supply of food consequent on the outbreak of the Second World War, the situation deteriorated and adulteration became rampant. The nature of punishment imposed on unscrupulous vendors were not such as to be deterrent so that in course of time the merchants thought that the fine was only a small loss in the huge profits they were making. To rectify the situation it appeared that more drastic measures were necessary and further that uniform laws should prevail in all the states so that unscrupulous merchants should be brought to book and the health of the people protected. With this object and with the concurrence of the State Government, the Central Government enacted the prevention of Food Adulteration Act in 1954 (No. 37 of 1954). This Act has certain

special provisions which did not exist previously. The penalties imposed are much heavier than what existed previously. For instance, according to this Act, an unscrupulous vender is punishable for the first offence with imprisonment for a term which may extend to one year or with fine which may extend to two thousand rupees or with both. While for a second offence the punishment is imprisonment for a term which may extend to two years and with fine, for the third and subsequent offences it is imprisonment for a term which may extend to four years and with fine. Further, not only was the assistant in the shop who actually sold the article punishable under the Act, but also the proprietor who often escaped in the past on the plea that he was ignorant of the malpractices of his assistants.

Since the punishment is severe, naturally it is necessary to have proper safeguards also for the merchants. This is done by the Central Government having under its control a Central Food Laboratory to which the sample should be sent for an independent opinion. In the previous Acts when the Government analyst gave an opinion, sometimes the merchant felt that his interests were not properly protected for the reason that the appellate authority was the same as the one who had condemned the sample. Further with the changed conditions that have occured following Independence, it is also necessary that foods that are imported into this country should be free from adulteration and therefore, the Central Food Laboratory would serve the purpose of keeping a proper check on such foods also. The Central Food Laboratory will in addition have the function of investigations for the purposes of fixation of standards for different articles of food and also will work in collaboration with the Public Analysts in the various States for the purpose of standardising methods of analysis.

The Central Food Laboratory started functioning in June 1955 and is temporarily located in the premises of the All India Institute of Hygiene and Public Health, Calcutta. A new construction is coming up at No. 3, Kyd Street, Calcutta to house the Laboratory. It is expected it will move into its own premises sometime in the middle of next year. Even within the short time the Act has been in force it appears that it has had a salutary effect on unscrupulous merchants. Therefore, we can confidently hope that within the next few years the unsocial elements in the community can be completely eliminated and everyone assured of pure and wholesome food.

"There is balm—for the wounded and there is bread for the hungry. There is water for the thirsty, and there is hope for the disappearing. There is light for those in darkness and there is inexhaustible blessing for the upright.

Heal your wounds ye wounded, and eat your fill ye hungry. Rest ye weary, and ye who are the thirsty quench your thrist. Look up to the light ye that sit in darkness; be full of good cheer ye that are forlorn."

---

(17) Bengal Immunity Research Institute Calcutta

Dr. U. P. Basu, *Director*

It was with the object of conducing scientific research as applied to industry that (the late) Capt. N. N. Dutta, the then Managing Director of the Bengal Immunity Co., Ltd., started the Bengal Immunity Research Laboratory in the year 1935. This Laboratory gradually developed into the present Bengal Immunity Research Institute, where researches covering various branches of the sciences of Chemistry, Biochemistry, Pharmacology and Bacteriology are being carried out. This Institute, situated at 39, Lower Circular Road, Calcutta, consists of one large four storied building with a few auxiliary units. The total floor area of the main building is 19,000 sq. ft. and the total area of the compound is about 40,000 sq. ft.

Scope of work : The scope of work includes (a) advancement of scientific knowledge by means of fundamental research; (b) research work bearing medicine, chemistry, biochemistry, physiology, bacteriology, pharmacology, biology, pharmacy and other subjects which have an impor-

tance from the stand-point of prevention, alleviation and cure of diseases and disorders that afflict human beings; and (c) development of newer medicaments.

Equipments: The Institute has been equipped with various appliances for carrying out physico-chemical, bacteriological and pharmacological researches. A well-developed animal breeding house has been provided to supply animals, such as mice, rats, guineapigs and birds in large numbers.

Library: The Library is accommodating over 6,000 volumes, amongst which are specially to be mentioned the bound volumes of higher technical journals of the world in the chemical, pharmaceutical, industrial, medical and biological spheres. The Institute subscribes 100 journals and periodicals, besides 15 journals received in exchange of "Immunity Bulletin", an annual publication from this Institute.

Museum: A museum has been set up in the Institute to accommodate the different varieties of Indian medicinal plants and their active principles. The museum specimens are being supplemented with harbarium speciniens of the drug plants.

Therapeutic Research: For testing the efficacy of drugs, prepared and biologically tested at this Institute, facilities are available at the Bengal Immunity Therapeutic Ward (R. G. Kar Medical College Hospitals), with which full liasion is maintained.

Publications: More than five hundred original papers, covering various branches of chemistry, pharmaceutical chemistry and biological sciences, have been so far published from this laboratory in different scientific journals in India and abroad. In order to focus the attention of specialists in the field, six memoirs have been so far published on specialised subjects of investigations, carried out at this Institute.

Scientific Association: Under the auspices of the Institute a scientific association under the name of "Immunity Scientific Association" has been formed some years ago, where the scientific workers often meet and make scientific discourses in the form of lectures or symposia. This association publishes a yearly bulletin, entitled "Immunity Bulletin" which surveys the results of researches carried out and published from the Institute, during the year under review, in various journals.

The association maintains a lecture hall, where meetings under the auspices of other scientific organisations are also held from time to time.

Collaboration: The Institute has been maintaining a close contact with other bodies responsible for chemotherapeutic and biological researches. Facilities are provided to scientific workers deputed by recognised bodies to work here on specialised branches related to chemical or biological sciences. A number of scholars deputed by the Government of India and the Universities have carried out researches at this Institute. Several schemes of researches, sponsored by the Council of Scientific & Industrial Research (Govt. of India), have been worked out here. Standardization in connection with the biological work has been carried out in collaboration with the World Health Organization.

Antirabic Treatment and Pasteur Institute in India

Contributed

History :

Rabies is one of the dreadful diseases that attracted the public sympapthy for establishing an Institute for its treatment. Thus the first Pasteur Institute in India was founded at Kasauli in 1893, mostly with the aid of public subscriptions. In 1899 the sanitary commissioner for the Government of India proposed for the first time the organisation of research laboratories in India. His scheme provided for a Central Research Laboratory and a local laboratory for each Province and Military Command. In spite of the approval of the scheme by the Secretary of State there was a considerable delay in its actual implpementation, and not until 1906 the Central Research Institute at Kasauli could be opened. In the meantime the Pasteur Institutes opened in 1900 and was incorporatel as a charitable concern. The chronological order of establishment of the Pasteur Institutes in India is given below:

1900—Pasteur Institute of India, Kasauli-Punjab.

1907—Pasteur Institute of Southern India, Coonor.

1913—Pasteur Institute of Burma, Rangoon.

1917—Pasteur and Medical Research Institute, Shillong, Assam.

1924—Pasteur Institute, Calcutta, and later at Bombay.

Now several states have a Pasteur Institute of their own, nd there are large number of treatment centres all over India.

1. Pasteur Institute of India, Kasauli.

As mentioned above the Institute was established mostly with the aid of public donations and was opened in 1900 with the following principapl objectives:

(1) The treatment of persons suffering from injuries by rabid animals.

(2) The study, diagnosis, practice and teaching of bacteriology, in all its branches with particular reference to the diseases of men, animals and plants.

(3) The investigation of tropipcal diseases and the practical application of bacteriological methods to the prevention and cure of diseases.

Major D. Semple (later Sir David Semphle) was the first to start the work and sucessfully treated the cases with his vaccine which came to be known as Semple vaccine all over the world. During the first year of its existence the Institute treated 321 patients. The popularity of the treatment is evident from the fact that the number of patients which attended in 1951 and 1952 rose to 34,267 and 32,407 with 5 and 4 deaths respectively.

The functions of the Pasteur Institute were incorporated with those of the Central Research Institute.

The vaccine employed at Kasauli and at the treatment centres supplied with Kasauli vaccines is a 5 per cent brain emulsion made from the brains of sheep infected with the Paris strain of the fixed virus, in phenolized distilled water. A vaccine is also prepared at the Institute for the treatment and prophylactic inoculation of animals.

The Institute besides preparing antirabic vaccine also originally manufactured antivenins, antitetanic and antidiphtheretic serum. In 1906 the latter part of the activities was transformed to the Central Research Institute, Kasauli.

Researches on rabies mainly with a view to provide more efficient vaccine was one of the main functions of this Institute since its inception. The I.R.F.A. have been generously contributing towards the object since 1926. The Institute now has more than 100 centres in the Punjab and Uttar Pradesh, Delhi State, Military and other state unions. The Institute carried out researches on typhus fevers in addition to those on rabies.

Recently a new antirabic vaccine made from the supernatant fluid of a brain emulsion in distilled water proved experimentally as effective as the Semple vaccine. Field trials with this vaccine is proceeding. Already very encouraging results have been obtained.

Investigations are also being conducted on the use of antirabic serum and the combined method of treatment with antirabic serum and vaccine.

(2) Pasteur Institute of Southern India, Coonoor.

The Pasteur Institute of Southern India was opened at Coonor, Nilgiri District in 1907. The major portion of the necessary funds was provided through the munificience of Mr. Henry Phipps, an American Philanthropist.

The Institute is the property of the Pasteur

Institute Association, a private body which was founded in 1906 and registered under the Societies Act of 1860. The income of the Association is derived partly from the voluntary contribution, partly from endowments and partly from the revenue accruing from the sale of vaccines. The management of the affairs of the Association is vested in a Central Committee consisting of ex-officio and elected members with the Director of the Institute as its secretary. The minimum subscription for membership is Rs. 5/- which entitles them to the privileges attached to it. The Institute is now self-supporting through its own income.

The objects of the Association are: to make available effective means of preventing the occurrence of rabies, to spread the knowledge of such means among the public, and to undertake research work on rabies or any other disease in so far as the funds permit and the staff of the Institute is qualified to under take such investigations.

The Institute itself as a very well constructed double storied building standing in some 13 acres of beautiful park land, with fine staff quarters and animal houses. It has also a fine library.

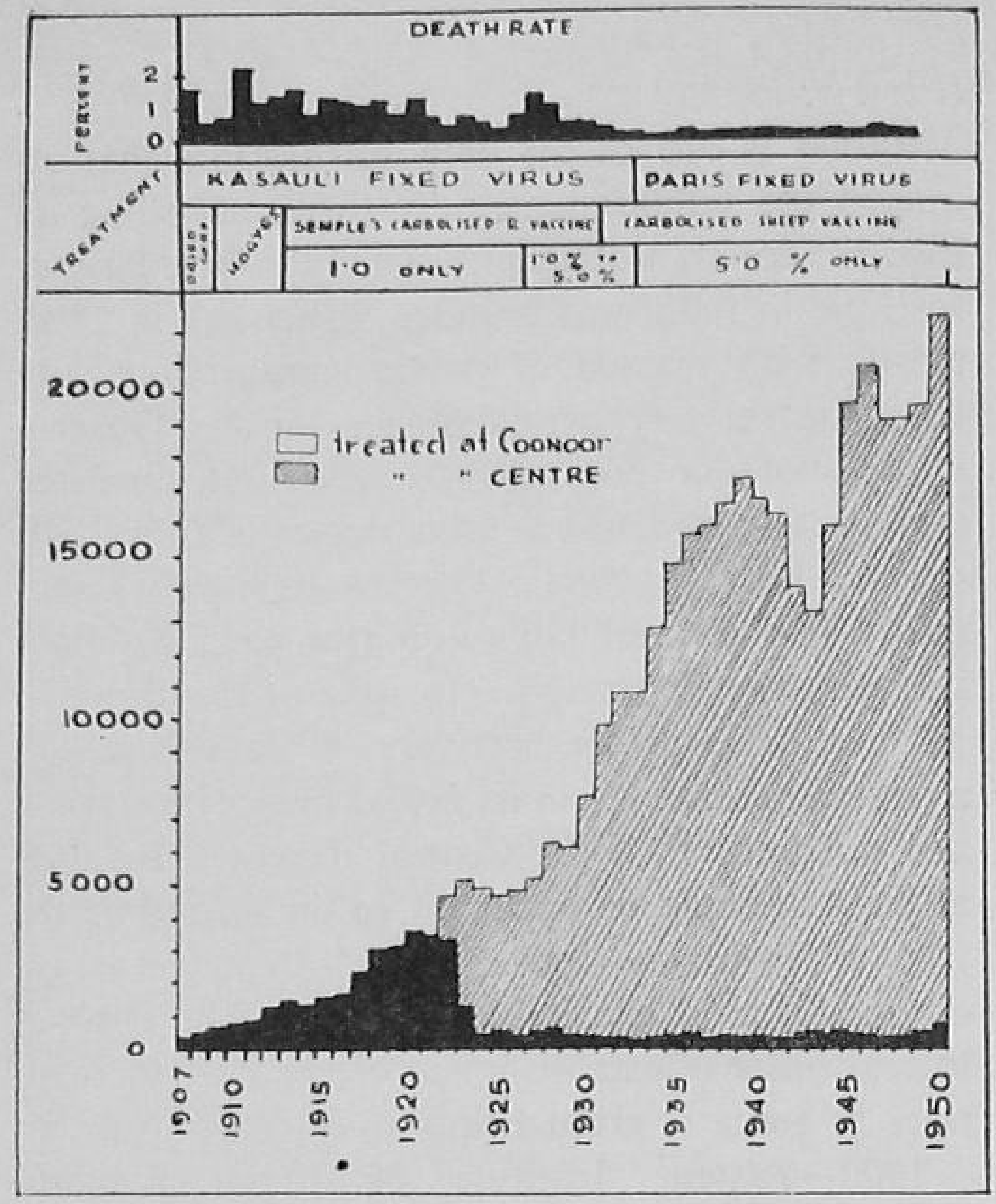
In recent years the Association has gradually undertaken more and more work of a general diagnostic laboratory and in addition to the routine and research activities the Institute has provided facilities for rescords financed by other sources e.g., on malaria, kala-azar, filariasis, entomological and other subjects. Some of these have been temporary and some have become more or less permanent.

The Nutrition Research Laboratories has had its head quarters at the Institutes almost continuously since 1918. The southern India Branch of the Research section of the Malaria Institute of India has been placed at this Institute since 1939.

Antirabic treatment :

Till 1926 only 1% suspension of sheep brain (carbolised sample vaccine) was used and between 1927 and 1932 it was varied between 1 and 5%, but since 1933 only 5% suspension is being used. The total number of patients treated at Coonoor and subsidiary centres since 1907 and the death rates among them are shown in Figure 1. The subsidiary centres number more than 200 in the Madras and neighbouring states. Antirabic treatment is given to the animals.

No OF PATIENTS TREATED AT COONOOR AND SUBSIDIARY CENTRES SINCE 1907 AND THE DEATH-RATE AMONG THEM



Influenza centre :

The newly organised virus laboratory of the Institute is designated as the WHO. Influenza centre in India equipped by the World Health Organisation.

Several Influenza outbreaks in the Nilgiris, Bombay and other places have been studied cases appear almost all throughout the year with partial increase in July-August and September. Evidences of the presence of both Type A and B viruses, have been obtained and the strains isolated are close to PRS and appear to belong to A-prime type. The phase behaviour of the strain are also being studied.

Some other researches which have been recently carried at relate to serological studies in syphilis and leprosy and haemogglutination of fowl cells by staphylococcus aureus.

As the result of close co-operation between the various organisations and enquiries referred to above, the Institute has been a centre for a active research since 1939. The numerous papers of scientific interest and important which have published during the past 46 years indicate the very useful part the Institute has played in medical and health work in South India.

(3) PASTEUR INSTITUTE, SHILLONG

The proposal to establish a Pasteur Institute in Assam was originally put forward by the Assam Branch of the Indian Tea Association in 1906. The continued efforts of the Association resulted in the allocation of a part of the King Edward Memorial Fund in 1910 for the construction of an Institute. The Indian Research Fund Association supplemented this Fund by a grant of Rs. 40,000 towards library and equipments and eventually the institute was opened as an antirabic treatment centre at Shillong in 1917. At the present time the main institute with its staff quarter is situaed in a compound of 10 acres in extent and certain auxilliaries are located on the outskirts of Shillong at an elevation of 5000 ft. The Institute and its auxilliaries consist of:—

(1) The main laboratory.

(2) A clinical research hospital.

(3) A malaria training centre connected with the Research Section of the Assam Medical Research Society.

The work of the Institute is organised in three main sections:—

(1) Rabies, (2) Laboratory Diagnosis and (3) Vaccine Manufacture.

Antirabic treatment:

The Rabies Section produces antirabic vaccine (Semple) and treats nearly 2,500-3,000 patients annually. In 1928 the policy of decentralisation of treatment was adopted and accordingly more 60 centres were established in various parts of the state.

Laboratory diagnosis:

The Institute serves as the state laboratory for routine diagnostic work including microscopical, cultural and serological and histopathological examination of clinical specimens.

Vaccine Department:

Since 1918 large scale manufacture of prophylactic vaccines have been undertaken chiefly cholera and T.A.B. Preparation of bacteriophage, single or combined, was once a speciality of this Institute for distribution almost all over India.

Medical Research:

The small clinical research hospital is an important part of the Institute and a great deal of experimental work has been carried out in it, and the treatment of cholera and dysentery by bacteriophage. In 1918 a special ward was opened for the treatment of kala-azar and here the efficiency of Brahmacharis Ureastibamine was confirmed by Shortt and Greig.

In 1924 the Kala-azar Commission was formed and worked out this Institute and in 1930 the Assam Medical Research Society, an auxilliary to the Pasteur Institute was established and undertook the study of malaria, cholera, anaemia etc.

The Institute has a good record in the field of research, particularly in Kala-azar, cholera, dysentery, malaria and Naga sore. Among the better known of these researches may be cited the treatment of Kala-azar and transmission by sandfly carried out by Shortt, Knowles and others, the work of Morison on bacteriophage and that of Rice and other on the investigation and control of Filaria in Assam. The Institute also played an important part in the 8-year programme of cholera research by Anderson, Pandit and others under the Indian Research Fund Association.

The State Public Health Laboratory, Shillong for routine analysis of food, water etc. is closely linked with the Institute.

[S. C. S.]

(4) PASTEUR INSTITUTE, CALCUTTA

DR. J. BANERJEA, *Superintendent*

Pasteur Institute in Calcutta was opened in 1924 in the School of Tropical Medicine, at the initiative of Major H. W. Acton, I.M.S. and Major R. Knowles, I.M.S. This Institute was a great boon to the patients of Bengal, Bihar and Orissa. The number of patients attending the Institute went on increasing and ultimately removal of this Institute to a bigger building became essential and the Institute was shifted to a big building with a compound for grazing of animals at 2, Store Road, Ballygunge, Calcutta, in 1933.

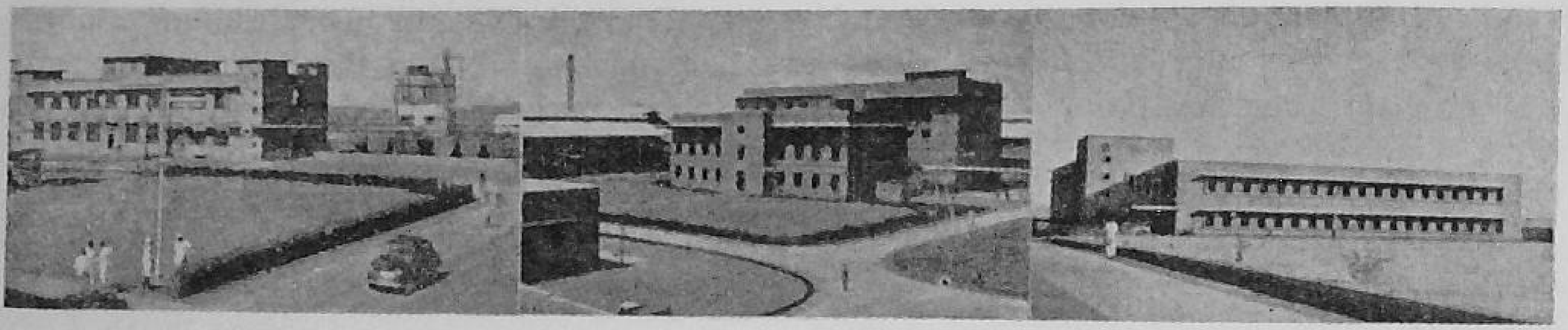
To bring the treatment within easy reach of patients of Bihar and Orissa, another Institute was opened in Patna under the Bihar Govt. at about this time. The patients of the several districts of U.P. that used to come over here for treatment found it more convenient to draw their vaccine from Kasauli. This partition led to a temporary fall in attendance but soon the number swelled up necessitating decentralisation of the treatment centre in Bengal. Accordingly treatment centres were opepned in all the districts and Sub-Divisional Hospitals. For some unforeseen circumstances this Institute had again to be shifted to the School of Tropical Medicine in 1945. At present a big laboratory is being built by the Govt. of West Bengal to accommodate this

Institute and several other laboratories. With the opening of the Thana Health Centres and Union Health Centres in the remote villages, the treatment centres were further decentralised and now it is possible for a patient in a remote village to avail this only life saving treatment with 3 days of animal bite. The registered medical practitioners are also supplied with vaccine and pamphlets bearing all the necessary informations about Rabiology and the methods of giving treatment, to make it convenient for patients where there is no hospital within easy reach.

Continued to page 144 bottom.

Pimpri Penicillin Plant

(GOVERNMENT OF INDIA)



Genesis of the National Project :

That India should become self sufficient in the field of pharmaceuticals, biologicals and antibiotics, as in any other spheres of products, is not only desirable but is needed to be pursued doggedly till it is achieved. This idea had been expressed from various Commissions and platforms from time to time, and actually started taking shape after the attainment of freedom. The idea that PENICILLIN the first and the formost of the antibiotics, should be manufactured in the country was mooted out as early as 1944 and various proposals were made to the Government which were received with mixed enthusiasm for various reasons.

In 1945 the "Panel on Fine Chemicals, Drugs and Pharmaceuticals" set up by the Government recommended that the Penicillin production should be undertaken as a state enterprise and that qualified scientists to be sent abroad to get acquainted with the techniques of manufacture. Accordingly in 1946 Major General S. S. Sokhey and Dr. K. Ganpathi of the Haffkine Institute of Bombay under-took this task and worked out the feasibility of manufacturing 1.2 million mega units. Due to delay in decision it became necessary to depute them again in 1948 along with Dr. G. Sankaran to make the plan up-to-date. This time the largest capacity was fixed at 4.8 million mega units, the modus operandi was worked out in details and the services of a Swedishi firm for putting up the plant was recommended. The Government of India decided to go ahead with the project as a joint enterprise with the Government of Bombay and in 1950 it entered into an agreement with the Swedish firm and also constituted a Committee under the name "Penicillin Committee" with Mr. N. S. Wadia as its Chairman, to take active steps for the impltmentation of the Project.

The situation changed again due to the Swedish firm contracting with an American firm to execute the project and to the two International organisations viz.; W.H.O. and UNICEF, offering assistance to the Government of India in putting up the plant, the former in the matter of technical advice and facilities for training of staff and the latter in that of finance to the extent of 850,000 dollars for equipments. Accordingly the Penicillin Committee was dissolved and the India Government entered into a tripartite agreement with the two International agencies in the July 1951. A plant with an initial capacity of 4.8 million mega units and a target of 9 million mega units was planned. In addition to the above, the other objectives enunciated were to produce other antibiotics, to contribute to the long range development of biological skills in India, and to eventually render India self sufficient in biologicals and antibiotics.

The foundation stone was laid in March 1952 by Shri N. V. Gadgil, tht then Minister in charge of Works, Mines and Supply. The construction

of the plant was completed at a cost of Rs. 1.5 crores, the WHO provided the technical team and the UNICEF the equipments and the key technical personnel were trained in penicillin technology in Belgium and Rome. In 1954, the project was converted into a Joint Stock Company with a working capital of Rs. 4 crores. All the shares are held by the President of India or his nominees. The management of the project is now in the hands of a Board of Directors nominated by him of which Shri S. Jagannathan, I.C.S., Joint Secretary, Ministry of Production is the Chairman and Col. J. R. Dogra, M.D., I.M.S., is the Managing Director.

Location, construction and start-up

In consideration of the easy availibility of land, service facilities (water, electricity, transport etc.) and climatic ionditions the plant has been located on a 200 acre site at Pimari, 9 miles from Poona on the Poona-Bombay Trunk Road and 800 yards from the Pimari Railway Station. The entire area enjoys a salubrious and fairly dry climate and is surrounded at a distance by picturesque low hills and natural scenery. The factory consists of several blocks and buildings neatly designed and constructed, intervened by lawns and clean cement roads. Some of the equipmpents have been prefabricated in India.

The first seeding operations were taken up by the second week of December 1954 and the first batch of crystalline potassium penicillin was produced on the 28th December, 1954. Starting with the trial runs on the 13th March, 1955 all the fermentations were brought into use by the end of July 1955.

The plant has various sections such as (1) the production and manufacturing section, (2) Plant Laboratory, (3) Ancillary services, (4) Research Laboratory, (5) Analytical section, (7) Stores and Despatch and (8) staff colony.

Capacity of the Plant:

The designed initial capacity of the plant was 4 million mega units per annum with a target production of 9 million mega units. The technology has further improved now it is expected that the plant will be able to produce double that capacity. But the demand of penicillin in the country has risen from 1.3 million mega units in 1948 to 25 million mega units in 1955. Further expansion of the plant is already under consideration.

Process of manufacture:

The raw material requirement per annum including lactose (500 tons), corn steep liquor (200 tons), ground nut meal (400 tons), ground nut oil (65 tons), cane sugar (25 tons), butylacetate (50 tons), butanol (10 tons), Acetone (10 tons), Acetic acid (50 tons), formalin (20 tons), phenylacstic acid or amide (30 tons), Procraine hydrochloride (20 tons), Calcium carbonate (75 tons), disodium hydrogen phosphate (30 tons), Potassium carbonate or hydroxide (50 tons), sodium hydroxide (10 tons) phosphoric acid (80 tons) and sulphuric acid (50 tons).

Tht production operation briefly consists of fermentation, filtration extraction, crystallization, assay, sterility tests, checking, bottling, quality testing, packing etc. the start of the whole process is the sead which constitutes the spores of the mould—Penicillin Chrysogenum, grown on barely medium. The required medium for the fermentation is composed of cornsteep liquor 1-1.5%, ground nut meal 2-3%, lactose 3-3.5%, $CaCO_3$ 0.4-1%, sterilised at 120°C for 30 minutes, and PH maintained at 6-6.5.

The main requiremen ts for the manufacture of penicillin are water (400,000 gallons per day), steam (300,000 pounds per day), compressed air (5000 cu.ft. of air per minute at 50 pounds pressure), electric power (2000 KW at 11000 volts—ultimate requirement 4500 KW at 22000 volts) refrigeration (500 tons capacity), several compressors (250 H.P.) two heavily insulated chilled water storage tanks of 100,000 gallons capacity each and effluent (capacity 400,000 gallons) disposal.

The manufacture of streptomycin with a capacity of 15000 Kg. will be put up, and also the manufacture of other suitablt forms of penicillin such as Bicillun and Penicillin V will be taken up soon. In fact, at the end of the 2nd Five Year Plan Pimpri expects to have several manufacturing units eompoarable in size and efficiency to any in the advanced countries.

All India Institute of Mental-Health, Bangalore

~~(3) Pasteur Institute, Shillong.~~
DR. M. V. GOVINDASWAMY, *Director*
All India Institute of Mental Health, Bangalore

The face of India has undergone many changes due to political and religious upheavels. More far reaching in their effects on the pattern of life in India is the silent revolution taking place in our midst due to economic and social forces, which have been released with the dawn of freedom. The impact of Western Science and Technology on our age long philosophic and artistic culture, has acted as a catalytic agent, giving rise to many discontents and tensions in all segments of life. The problem of preserving and promoting Mental Health has gained an added significance, in the face of the new stresses and conflicts in a rapidly changing pattern of Society. The need for promoting social harmony, personal equanimity, poise of mind, and discipline, has never been greater, than in the present welter of disruptive forces, consequent upon the break-up of the joint family system. Rapid industrialisation and the uprooting of people from rural to urban areas create many problems in Mental Health, which demand urgent attention.

Our Mental Health programme should aim at the development of *affectionate* and *satisfying* human relations, at all ages and levels of society, and at the reduction of hostility and tensions, in inter-personal and inter-group relations. Further, apart from these social implications, a Mental Health programme should aim at giving the individual *serenity* and poise of mind, that comes from *disciplined* life.

In India, belief in God, the development of a personal philosophy of life, a carefully organised and unitary family system, and early marriage, afforded until recently, an effective security against mental break down.

The responsibility for promoting the Mental Health of society, rests not only with its Psychiatric Services, but to a much greater extent, on its Legislators, Administrators, Educationists, Industrialists and Social Scientists. Various forms of social pathology like alcoholism, delinquency, beggary, crime, prostitution, mass hysteria and rioting, call for effective social action. But such action, far from being of a purely negative character such as imprisonment and prohibition, should make a positive and constructive approach to the problem, and aim at rehabilitating the individual and reforming social customs and institutions.

Now, what about the incidence of mental morbidity in India? No reliable statistics of any kind are available; but these seems to be good reason to believe that an enormous number of persons require psychiatric assistance and service. In India, the ratio of mental patients is not less than 2 per thousand of population. Compare this with U.S.A., where it is 5 to 8 per thousand, or England where it is 4 per 1000. But 2 per 1000 is not a small number: it means that about a million Indians require hospital accommodation. This does not however include the large number of mental defectives who need both medical and psychological treatment, and the epilpetics (latent and explicit) who average about one in two hundred of the population. Considering the needs of India, the psychiatric help now available is extremely unsatisfactory. Including mental defectives and Psychotics and excluding psycho-neurotics, accommodation is needed for at least two million mental patients. If we include the psycho-neurotics also, the figure may reach six to eight millions. The total number of beds available now in Mental Hospitals, however, is only twenty thousand. There is hardly any provision in our Country for the education of the mental defectives. Provision for the treatment of Psychosomatic diseases in our general hospitals is *not* at all adequate. Mental morbidity depends for its development on the inter-action of the following groups of factors:—

1. Hereditary;
2. Sex differences and age periods;
3. Emotionl stresses and strains, early and remote;
4. Childhood stresses in particular;
5. Cultural, familiar socio-economic influences; and
6. Structural pathology and physical illnesses of various kinds.

So, in any programme of prevention and cure of mental diseases, and the promotion of positive

mental health, all these factors have to be taken into consideration.

The All India Institute of Mental Health, a post-graduate teaching and research Institute set up by the Government of India in association with the Mysore Government Mental Hospital, Bangalore, was inaugurated by Rajkumari Amrit Kaur, Union Health Minister, on August 6th, 1954. As visualised in her inaugural address, the functions of the Institute are chiefly:

1. To plan and conduct research projects on problems relating to mental health and disease.
2. To train Psychiatrists, Psychiatric Nurses, Occupational Therapists and other personnel required to staff various Mental Hospitals and Psychiatric Clinics in General Hospitals.
3. To train Psychologists and Psychiatric Social Workers.
4. To conduct surveys in selected urban and rural areas on the incidence of mental morbidity and the biological and ecological factors that are responsible for mental morbidity.

The Institute consists of several departments concerned with Psychiatry of adults and children. In the department of Psychosomatic Medicine, the influence of chronic emotional difficulties and stresses, in the production of physical diseases like high blood pressure, heart and circulatory disease of all kinds, skin diseases, ulcers, asthma and other respiratory infections, are studied. In the Department of Biochemistry, a research enquiry financed by the Indian Council of Medical Research is being undertaken. It deals with the collection of basis factual data regarding mental patients' blood, cerebro spinal fluid, with the blood relatives of patients as controls.

The Department of Psychology and Human Relations is engaged in investigating the effects of socio-cultural back-ground on mental health and disease, with special reference to the ways in which one's sense of values and lead to the integration, or the dis-integration of personality. Studies are under way on Ancient Indian methods of mind control and spiritual evolution of the individual as exemplified in Yoga systems. The value of symbolism and rituals as cathartic agencies are also being investigated. There are various auxiliary departments like Electronics, Statistics etc., which will help in unrevelling the etiological factors leading to mental breakdown. Under the Second Five Year Plan, the Government of India have sanctioned a grant of Rs. 41 lakhs for the development of the Mental Health Services through the Institute.

The following are amongst the chief measures contemplated in the immediate future under the Second Five Year Plan:

(1) The starting of Guidance and Counselling Centres in selected rural and urban areas;
(2) Opening of Psychiatric Wards in General Hospitals;
(3) The establishment of Child Guidance Centres in different parts of the city;
(4 The training of teachers in the principles and methods of mental hygiene.

We have tried to sketch very briefly within the time at our disposal, the main problems in mental health which are facing us. Although there are immense in magnitude, since a beginning has been made in the right direction, we are confident that within the next decade many of these will be brought under control with careful planning and sustained social action. Finally, we conclude with the motto of the All-India Institute of Mental Health—"Equanimity is life's highest ideal". "SAMATVAM YOGA UCHYATE".

Health Schemes in the First and Second Five-Year Plan

T. LAKSHMINARAYANA, New Delhi.

The state of public health is low and is reflected in the wide prevalence of disease and the high mortality rate in the community as a whole and in particular among the vulnerable groups of infants, children and mothers. A large part of the mortality is preventable. Moreover, the loss caused by morbidity in working time is enormous. The productive capacity of the industrial and agricultural worker is comparatively low.

The causes of this low state of health are many. The lack of hygiene environment conducive to healthful living, low resistance primarily due to lack of adequate diet and poor nutrition and lack of medical care are some of the more important factors. Trained medical personnel are inadequate. The country's financial resources are limited.

In these circumstances, a programme with the following priorities formed the basis of the First Five Year Plan:—

(i) provision of water supply and sanitation;
(ii) control of malaria and filariasis;
(iii) preventive health care of rural population through health units and mobide units;
(iv) health services for mothers and children;
(v) education and training and health education;
(vi) family planning and population control.

A sum of Rs. 140 crores was provided by the Central and State Governments for health schemes in the First Five-Year Plan. The expenditure on health development schemes in each year of the first plan is as follows:—

(Rs. in laks)

1951-52	1952-53	1953-54	1954-55	1955-56	1951-56 (Total)
1171.50	1320.09	1662.60	2399.17 (Estimate)	3652.06 (Estimate)	10205.42

In the early part of the plan period, the expenditure incurred was low. This was due to procedural delay, lack of personnel and material, and late inclusion of some schemes. The tempo of progress however increased in the latter part of the plan period.

The details of provision made for various programmes in the first plan are shown in Table I.

The progress made under some of the programmes in the first plan is summarised below:—

Water Supply and Sanitation: Urban: Twenty-three States participated in the National Water Supply & Sanitation scheme for which a provision of Rs. 1,272 lakhs was made. Out of 196 water supply schemes and 58 drainage schemes sanctioned, 187 water supply schemes and 42 drainage schemes were taken in hand. About Rs. 829 lakhs were paid as loan.

TABLE I

Programmes	(Rs. in crores) First Five-Year Plan Provision
1. Water supply and sanitation ...	48.70
2. Control of diseases (malaria, filariasis, tuberculosis, leprosy and venereal diseases) ...	28.55
3. Hospitals, dispensaries and health units	27.50
4. Education and training (expansion of, and new medical colleges, dental colleges and other training programmes) ...	25.10
5. Indigenous systems of medicine	2.40
6. Laborator services; Vital Statistics and research, and administration	2.20
7. Maternal & child health services	1.50
8. Family planning	0.65
9. Others	3.40
	140.00

Rural: 134 schemes were approved and a subsidy of Rs. 280.07 lakhs was paid to the 21 States which participated in the National Water Supply Scheme.

Control of Communicable Diseases: Out of 162 malaria control units proposed to be established, 133 units were functioning at the end of the plan period covering a population of 106.98 millions. The total expenditure incurred was Rs. 1136.68 lakhs.

Thirteen control and 22 survey units for control of filariasis were sanctioned.

During the plan period 130 B.C.G. teams were established: 71.6 million persons were tuberculin tested and 24.6 million vaccinations were done. The increased institutional facilities provided are

	1950	1954 (Jun)
Sanatoria	49	69
T.B. Hospitals ...	35	65
T.B. Clinicals ...	110	166
T.B. Wards	114	140
No. of beds in Sanatoria, Hospitals & Wards ...	10,371	16,827

Training of Medical Personnel: As a result of training programmes, the number of available personnel in certain categories is shown below:

	1950-51	1955	Target for 1955-56
Nurses	17,000	24,149	22,000
Midwives	18,000	27,788	26,000
Health Visitors	600	811	800
Nurse Dais/Dais	4,000	6,826	6,000

(NOTE:—The targets set for the plan in respect of the above categories of personnel were realised by 1955.)

The general aim of health programmes during the Second Five-Year Plan is to expand existing health services, to bring them increasingly within the reach of all the people and to promote a progressive improvement in the level of national health. The specific objectives of health programmes during the Second Five-Year Plan are:—

(i) establishment of institutional facilities to serve as bases from which services can be rendered to the people both locally and in surrounding territories;

(ii) development of technical manpower through appropriate training programmes and emplpoyment of persons trained;

(iii) as the first step in the improvement of public health, institution of measures to control communicable diseases which may be widely prevalent in a community;

(iv) an active campaign for environmental hygiene; and

(v) family planning and other supporting programmes for raising the standard of health of the people.

The Central and State Governments have together provided Rs. 274 crores for the second plan which is nearly twice that provided in the first plan.

TABLE II

Programmes	(Rs. in crore Second Five-Year Plan Provision
1. Water supply and sanition ...	91.00
2. Control of diseases (malaria, filariasis, tuberculosis, leprosy and venereal diseases) ...	58.00
3. Hospitals, dispensaries and health units	66.00
4. Education and training (expansion of, and new medical colleges, dental colleges and other training programmes) ...	38.00
5. Indigenous systems of medicine	6.50
6. Laboratory services; Vital Statistics and research, and administration	6.50
7. Maternal and child health services	3.00
8. Family planning	5.00
9. Others	—
	274.00

The targets set for some of the important schemes are as follows:—

(1) Establishment of over 3,000 health units;

(2) (a) Opening of a few medical colleges;

(b) Expansion of existing colleges so that annual admissions may be increased by about 400;

(3) (a) Opening of 5 dental colleges;

(b) Expansion of existing dental colleges so that the number of admissions may be doubled;

(4) The medical personnel are expected to be increased as shown below—

	1960-61
Doctors	82,500
Nurses (including auxiliary nurse-midwives)	31,000
Midwives	32,000
Health visitors	2,500
Nurse-dais and dais ...	41,000
Health assistants and sanitary inspectors	7,000

(5) Opening of five Ayurvedic colleges and establishment of 1,100 Ayurvedic dispensaries

(6) The number of malaria control units to be increased to 200 to afford protection to the whole population at risk;

(7) The number of filaria control units to be increased to 78 so that the 25 million people exposed to risk may be protected;

(8) Opening of 200 tuberculosis clinics, ten teaching & demonstration centres and addition of about 4,000 beds in tuberculosis institutions;

(9) Establishment of 88 subsidiary centres for leprosy control;

(10) Setting up of about 2,100 maternity and child health centres which will be integrated with the primary health unit services: 5 paediatric centres are proposed to be opened;

(11) About 2,500 family planning clinics will be established, of which 2,000 will be in rural and 500 in urban areas.

Second Five-Year Plan Additional Notes

[S. C. S.]

1. *Nutrition :*

The most important single factor in the maintenance of health is nutrition. With the improvement in the ppropduction of cereals in the first plan, there will be greater stress now on increasing the production of protective foods such as milk, eggs, fish, meat, fruits and green vegetables. Priority in improving nutrition is to be given to vulnerable groups such as expectant and nursing mothers, infants, toddlers, pre-school children and children of school-going age. The resources available for development are still too limited to permit more than a small beginning in these directions.

The Indian Council of Medical Research has selected the following projects as deserving of high priority for implementation during the second plan:

(1) survey and prevention of protein malnutrition;
(2) growth and physical development of Indian children;
(3) control of dietary and nutritional diseases like lathyrism, endemic fluorosis, etc.;
(4) clinical nutrition research;
(5) food technology (par-boiling of rice);
(6) mid-day meals for school children;
(7) studies on the envaluation of nutritional status and studies into certain aspects of energy metabolism and protein, vitamin and mineral metabolism;
(8) expansion of nutrition research laboratories;

2. *Family Planning :*

The programme of family planning which was started during the first plan will be continued on a substantially increased scale. The programme includes:—

(1) Grants to State Governments, local authorities and voluntary organisations for opening family planning clinics,
(2) Training of personnel,
(3) Public education on family planning and population problems,
(4) Research in human fertility and in the means of regulating it, and
(5) Demographic research, including the study of inter-relationships between social, economic and population changes, reproductive patterns and attitudes and attitudes and motivation, affecting the size of he family and suiable procedure for the rapid education of the people.

About Rs. 5 crores have been provided for the family planning programme. It is expected that about 300 urban and 2,000 rural clinics will be set up during the second plan.

3. *Health Education :*

The provision of medical and public health facilities will achieve the objective of promotion of positive health in the measure in which the people take full advantage of these facilities and change their health practices and attitudes. This calls for a special effort towards general health education. About Rs. 75 lakhs has been provided for health education programmes in the second five-year plan.

---

* This Institute besides the province of West Bengal, supplies vaccine to Nepal, Bhutan, Sikkim, all tea gardens of West Bengal, Coalmines, private practitioners of several other provinces and to the Railway up to Moradabad, Sambalpur, Nagpur and Vizaj.

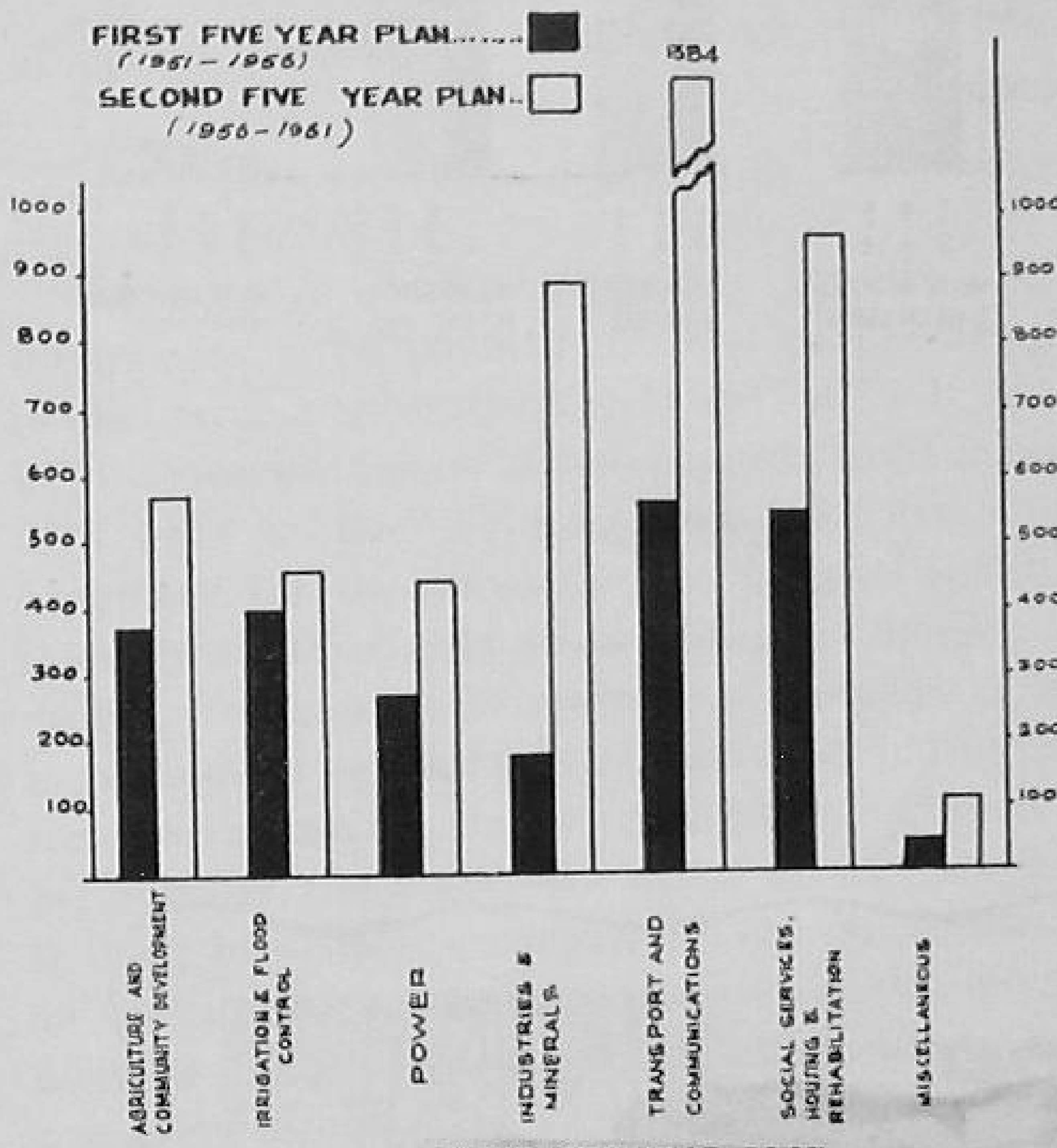
Last year 11,414 patients attended the different centres in Calcutta and outside and 10,954 courses of vaccine were sent out for treatment of cases. 34,000 c.c. of vaccine was also issued for the treatment of animals.

* continued from page 138 top.

Second Five-Year Plan: Illustrations

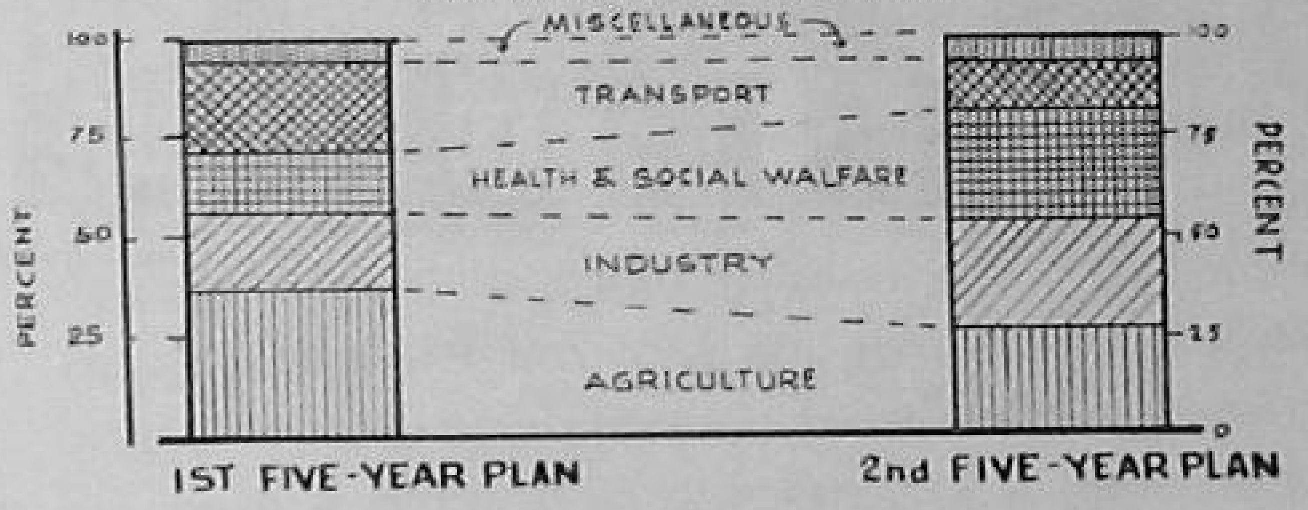
DR. S. C. SEAL AND P. M. ROY, Calcutta

PLANNED EXPENDITURES (IN CRORES) FOR DIFFERENT SECTORS IN THE TWO FIVE-YEAR PLANS



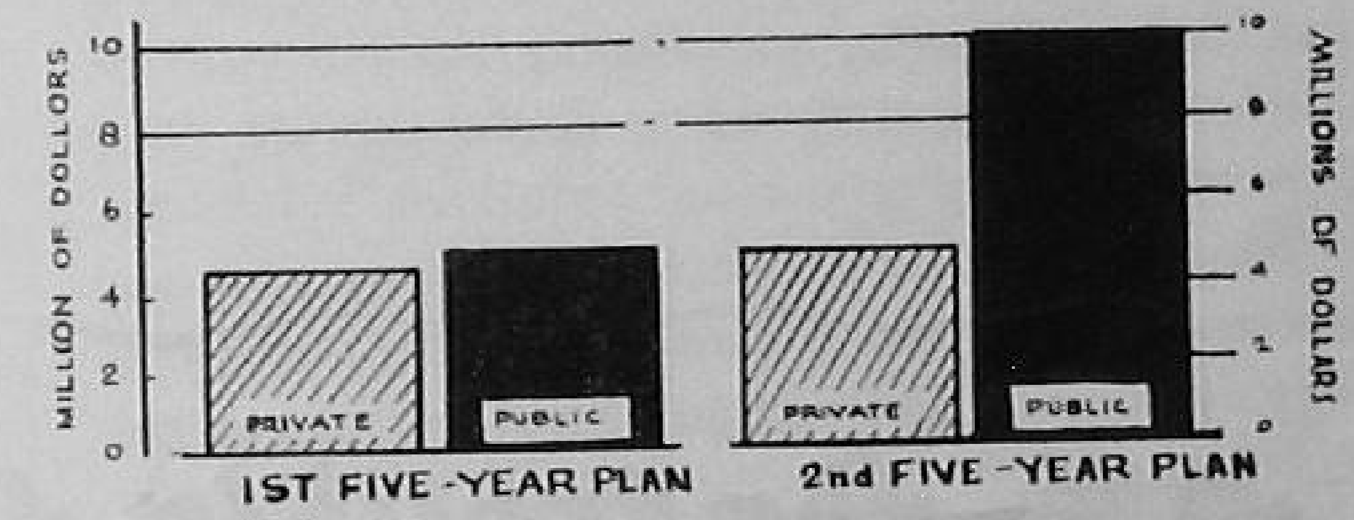
PERCENTAGE ALLOCATION OF PUBLIC EXPENDITURE TO VARIOUS SECTORS IN THE TWO 5 YEAR PLANS

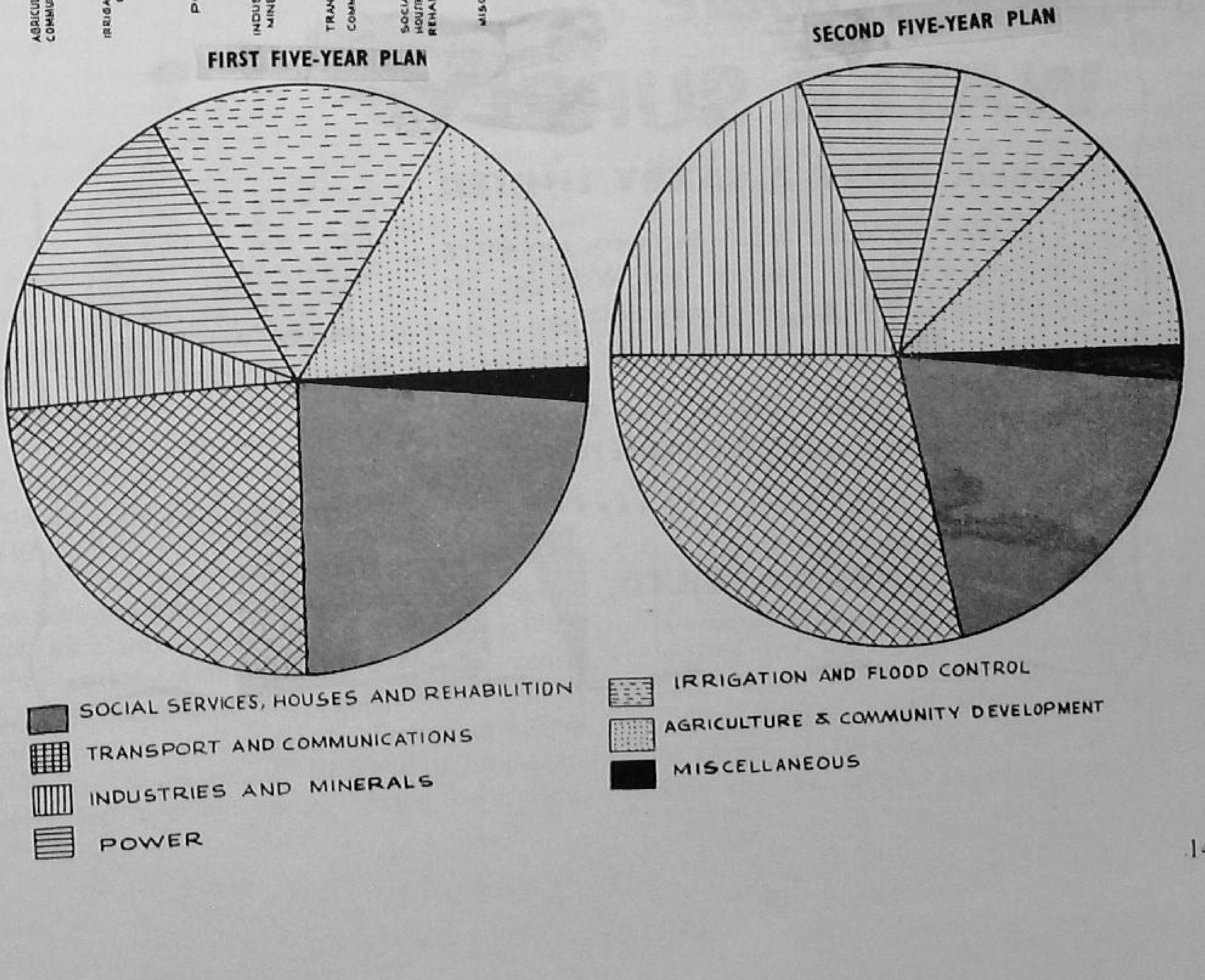
AGRICULTURE TO INDUSTRY



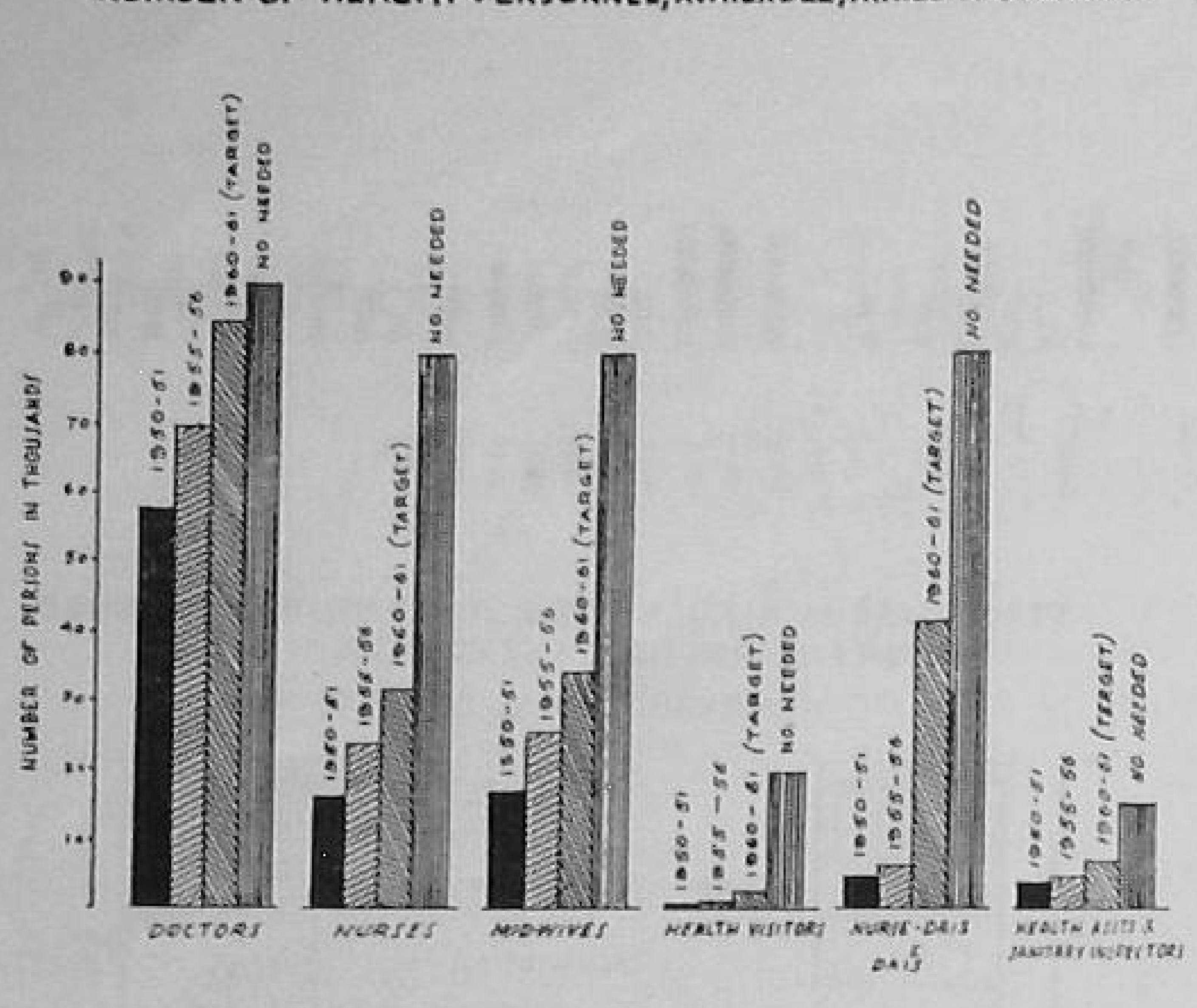
TOTAL INVESTMENTS IN THE FIRST 2 FIVE YEAR PLANS

PUBLIC TO PRIVATE INVESTMENT

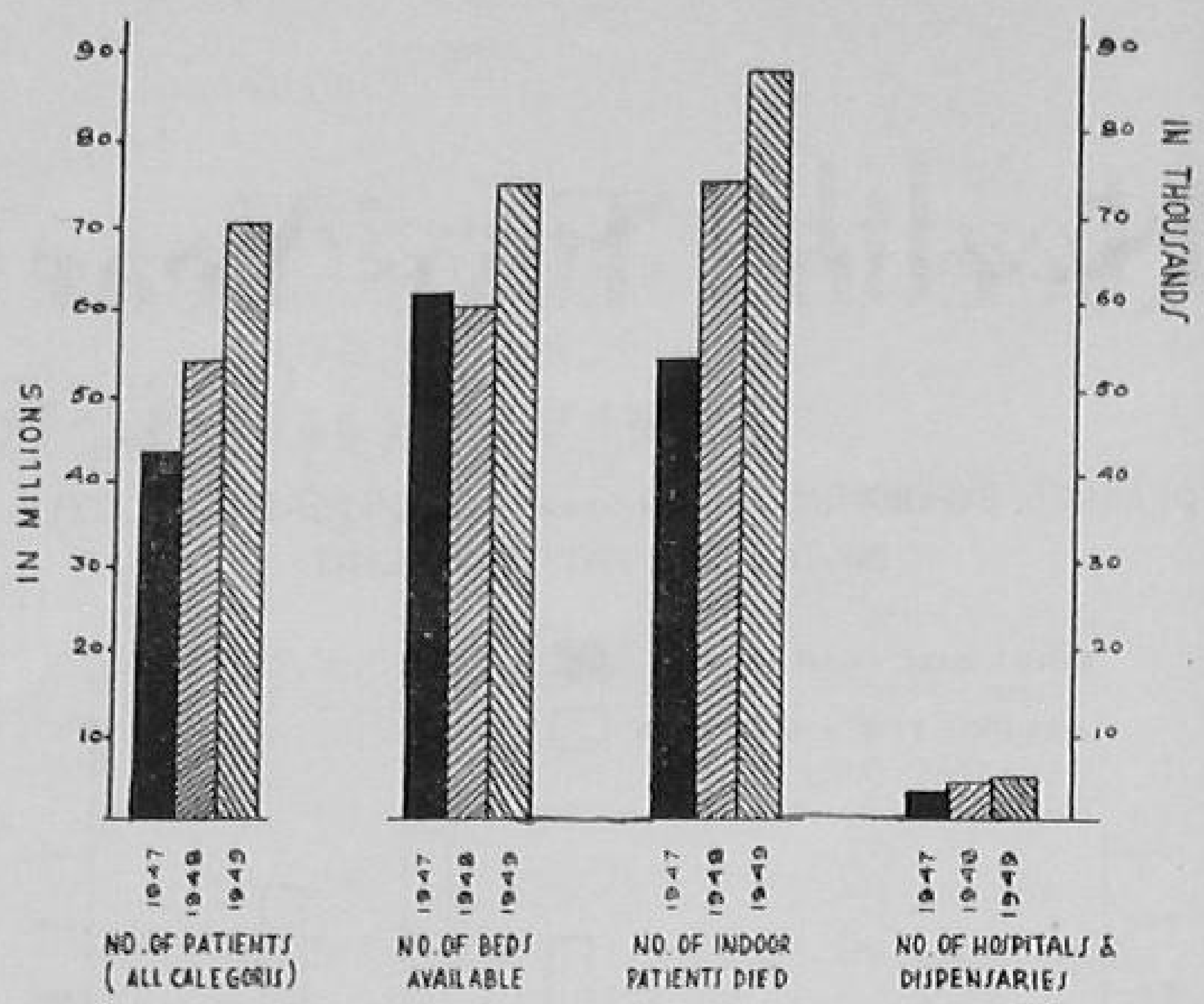




NUMBER OF HEALTH PERSONNEL, AVAILABLE, AIMED AT & NEEDED



NUMBER OF PATIENTS, HOSPITALS & BEDS IN INDIA

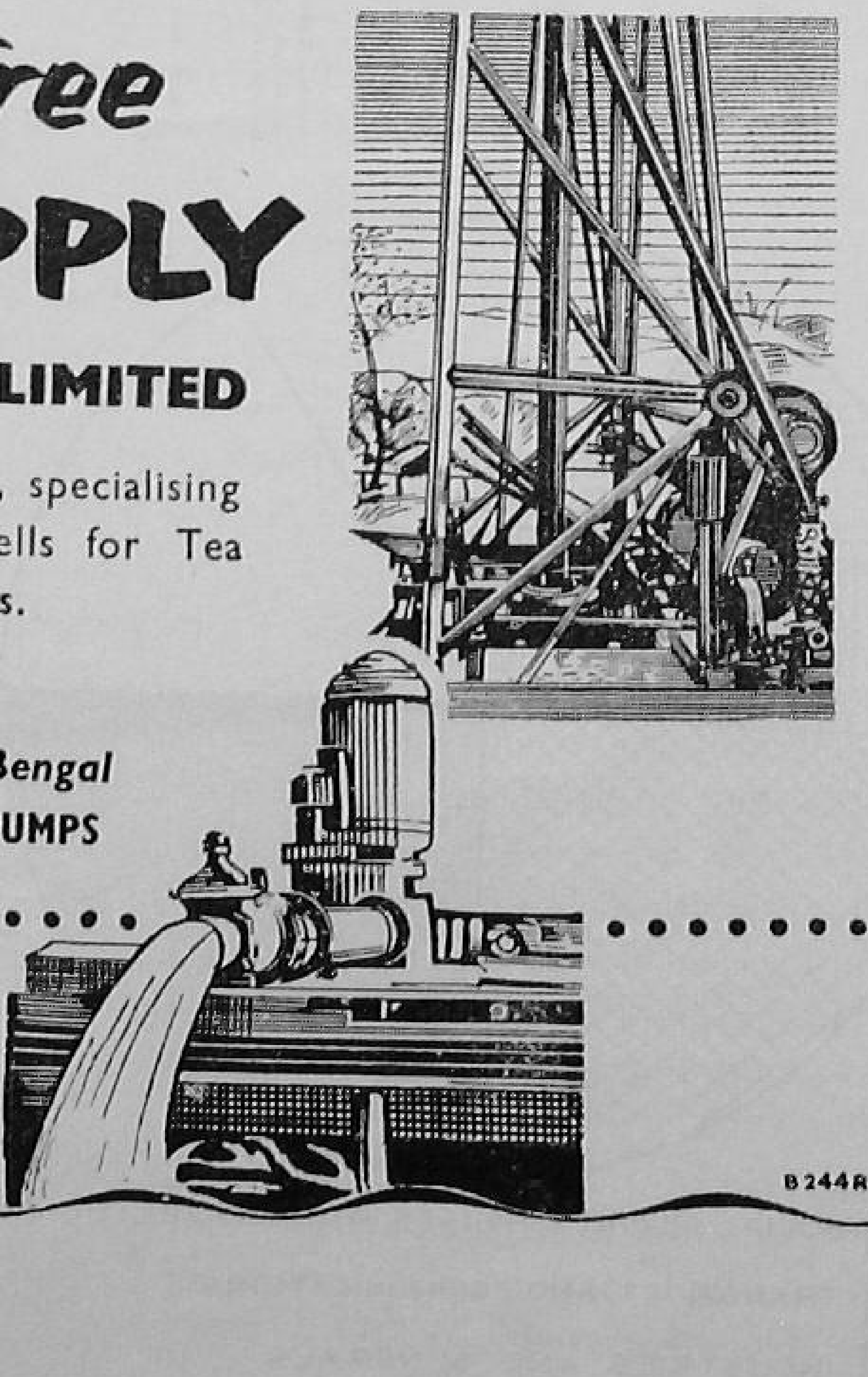


for trouble-free

WATER SUPPLY

consult **SCOTT & SAXBY LIMITED**

Tube Well and Water Supply Engineers, specialising in Deep and Large Capacity Tube Wells for Tea Gardens, Jute Mills etc. and Municipalities.



Sole distributors in Assam, West Bengal and Orissa for **JOHNSTON TURBINE PUMPS**

Managing Agents :

BIRD & CO., (PRIVATE) LTD.

Chartered Bank Buildings, Calcutta-1

B 244 R

Health Services and the Community Development Programme

By Col. Barkat Narain,
Adviser on Health, Ministry of Community
Development, New Delhi

The purpose of the Community Development Programme is to establish for the people living in the project areas the "right to live". It has been conceded that it is not possible to exercise the "right to live" without creating conditions conducive for the promotion of positive health. It has been clearly laid down that major emphasis in the Community Development Programme is to be laid on agricultural development and other measures necessary to raise production and thereby improve the economic status of the people. It must be remembered that health should form an integral and essential part of economic development. Unless people are healthy, they cannot enjoy the true benefit of their improved economic status. Further the health of the people in the village or the nation is a measure of human resources available for production of food, operation of industries and to maintain the standard of living. Poor health not only keeps away workers from the fields and other places of employment but it greatly burdens the low family income and brings suffering and unhappiness. As such success of the Community Projects will, therefore, necessarily depend upon the satisfactory maintenance of the health of the community.

The existing medical and health facilities in the rural areas are conspicuous by their absence and wherever they exist, are most inadequate. The findings of the Bhore Committee have revealed the inadequacy of trained personnel for medical and public health work both in the urban and rural areas.

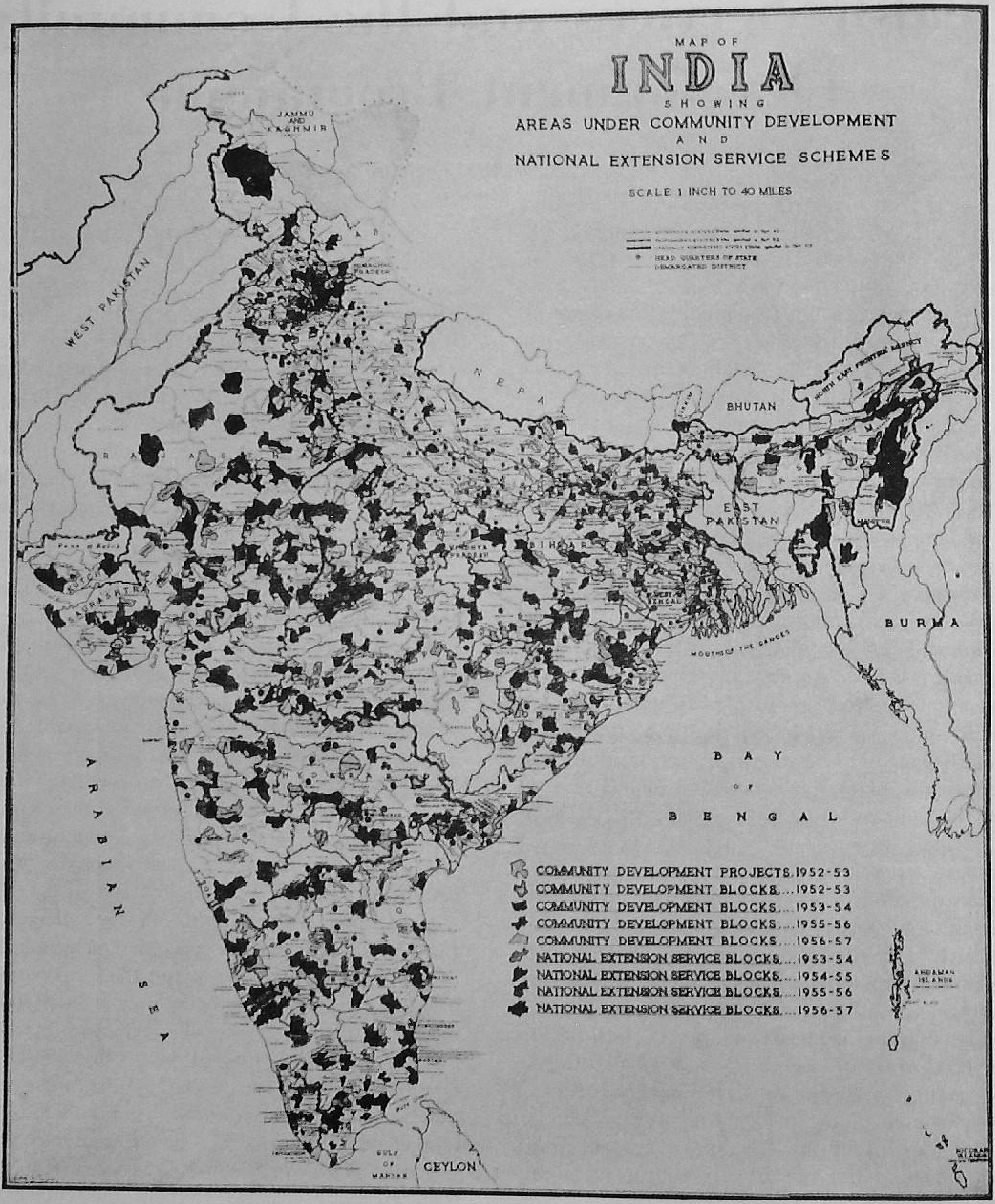
In the field of environmental sanitation, conditions are deplorable, particularly in the field of safe water supply and proper disposal of human ercreta. On an average 20 lakhs of people die every year from filth-borne diseases, like cholera, dysentery, diarrhoea and typhoid group of fevers. Besides, most of the epidemic diseases have their origin in the rural areas. In addition, malaria has been a problem of a very great magnitude in this country.

To remedy the above state of affairs an integrated pattern for the development of health services in the community project areass has been set up, which combines both curative and preventive measures with emphasis on prevention In view o the large incidence of sickness in the rural areas, it is essential to provide curative services in the beginning and simultaneously take measures for the prevention of disease and improvement of health. Fortunately, a great deal of sickness in the rural areas is preventable.

It is presumed that most of the readers know about the Community Development Programme and the National Extension Service in the country. For the benefit of those who are not aware of this programme, a brief description is given below:

Since the community life in the villages in India is a multi-purpose one, the programme is also a multi-purpose one to suit the local pattern. The objective of the programme is to revitalise the life of the rural people and make them develop this programme with self-help" by improved methods and practices. The villagers' co-operation and participation in this programme is of fundamental importance. The Community Project and National Extension Service staff have been especially trained to help the villager to help himself with the latest scientific methods for a "better living".

Fifty-five Community Projects were allocated on October 2, 1952 and 53 Community Development and 251 National Extension Service Blocks



MAP OF
INDIA
SHOWING
AREAS UNDER COMMUNITY DEVELOPMENT
AND
NATIONAL EXTENSION SERVICE SCHEMES
SCALE 1 INCH TO 40 MILES
HEAD QUARTERS OF STATE
DEMARCATED DISTRICT
JAMMU AND KASHMIR
WEST PAKISTAN
NEPAL
BHUTAN
NORTH EAST FRONTIER AGENCY
EAST PAKISTAN
BIHAR
SAURASHTRA
KUTCH
HYDERABAD
BURMA
MOUTHS OF THE GANGES
BAY OF BENGAL
ARABIAN SEA
ANDAMAN ISLANDS
NICOBAR ISLANDS
GULF OF MANAAR
CEYLON
COMMUNITY DEVELOPMENT PROJECTS 1952-53
COMMUNITY DEVELOPMENT BLOCKS....1952-53
COMMUNITY DEVELOPMENT BLOCKS....1953-54
COMMUNITY DEVELOPMENT BLOCKS....1955-56
COMMUNITY DEVELOPMENT BLOCKS....1956-57
NATIONAL EXTENSION SERVICE BLOCKS....1953-54
NATIONAL EXTENSION SERVICE BLOCKS....1954-55
NATIONAL EXTENSION SERVICE BLOCKS....1955-56
NATIONAL EXTENSION SERVICE BLOCKS....1956-57

were allocated on October 2, 1953. The demand from the people for allocation of more blocks was so great that the National Development Council under the chairmanship of the Prime Minister decided to adopt National Extension Service as a permanent pattern of development for the whole country As such since October, 1953 only N.E.S. Blocks have been allocated and after satisfactory performance these are converted for intensive development later on. The Prime Minister has described these blocks as "centres of human activity which are like lamps spreading their light more and more in the surrounding darkness." A total of 5,000 Blocks will be allocated during the First and Second Five Year Plans to cover the entire rural area. Each Project consists of 3 blocks and each block of the Community Project and National Extension Service has a population of about 66,000 in about 100 villages. Uu-to-date nearly 1,200 blocks have been collected to different States covering a population of about 82.2 millions living in about 1,27,000 villages.

The difference between the Community Development Block and the National Extension Service Block is that while in the Community Development Block all aspects of the multi-purpose programme, i.e. agriculture, health, social education, cottage industries, minor irrigation, etc. are being developed but in the National Extension Service Block agriculture and animal husbandry are being developed to begin with and a small provision has been made for medical and health programme by giving grants-in-aid to the existing institutions and for improvement of water supply, drainage and sanitation, etc. Community Development Programme is only for a period of 3 years after which the programme will return to N.E.S. pattern. As soon as any of the N.E.S. Blocks are converted into C.D. Blocks, additional budget additional budget provision is made for the development of medical and health facilities on the same pattern as in the Community Development Blocks.

For the provision of health services, it was decided to set up a Primary Health Centre with three maternity sub-centres in each Community Development Block. This Centre will provide an integrated form of medical care both curative and preventive. The Centre will be the focus from which the health services will radiate into the area covered by the Development Block. The development of health services in the Community Development area is the responsibility of the Administrative Medical Officer of the State concerned and as such the pattern of development must conform to the over-all pattern for provision of rural health services in the State. It must be emphasized here that the Development Commissioner is the co-ordinating authority only and the responsibility for the initiation and development of health programme rests entirely with the Medical & Health Department of the State. The District Medical Officer of Health in whose area the block is situated will be responsible for the over-all supervision of the technical staff and services rendered by the Primary Health Centre. He will also give technical advice when necessary. The main services that are to be provided for the people from the Centre are:

1. Medical relief;
2. Maternal and child health care including family planning and training of untrained dais;
3. School Health;
4. Health Education;
5. Environmental sanitation with priority for provision of safe water supply and hygiene disposal of human excreta;
6. Control of communicable diseases with priority for malaria;
7. Collection of vital statistics.

In addition to these services, other Health Programmes on an all India basis for the control of malaria, filaria, leprosy, yaws, venereal diseases, tuberculosis, etc. are being carried out in the community development and N.E.S. areas wherever these constitute health problems. Such services to begin with are being carried out by specialised units and co-ordinate their programme with the existing health programmes in the community development areas. Later these programmes will be integrated with the health services at the Primary Health Centre of the area for maintenance.

Taking into account the paucity of trained personnel and limited financial resources, the staff at each Primary Health Centre will at least consist of the following:

1. Medical Officer ...	... 1
2. Compounder ...	... 1
3. Lady Health Visitor	... 1
4. Midwives ...	... 4
5. Sanitary inspector	... 1
6. Class IV staff ...	... 2

Progress in the field of public health had been slow in the early stages of the programme but

is now gaining momentum. There were a number of factors responsible for the slow development. Most of these have been overcome by now in many of the States, but some States have still to solve these problems.

Some of the problems are:

1. *Lack of Co-ordination*:—The most important factor in the beginning was lack of co-ordination, in majority of the States, between the Department of Health and Department of Development. The Health Department felt that the show belonged to the Development Department and as such the community development areas had to be developed in an isolated manner from the rest of the health programme of the State concerned. This mis-understanding has now been cleared and the Administrative Medical Officers have taken up the development in community project areas as a part of the over-all health development programme of the State.

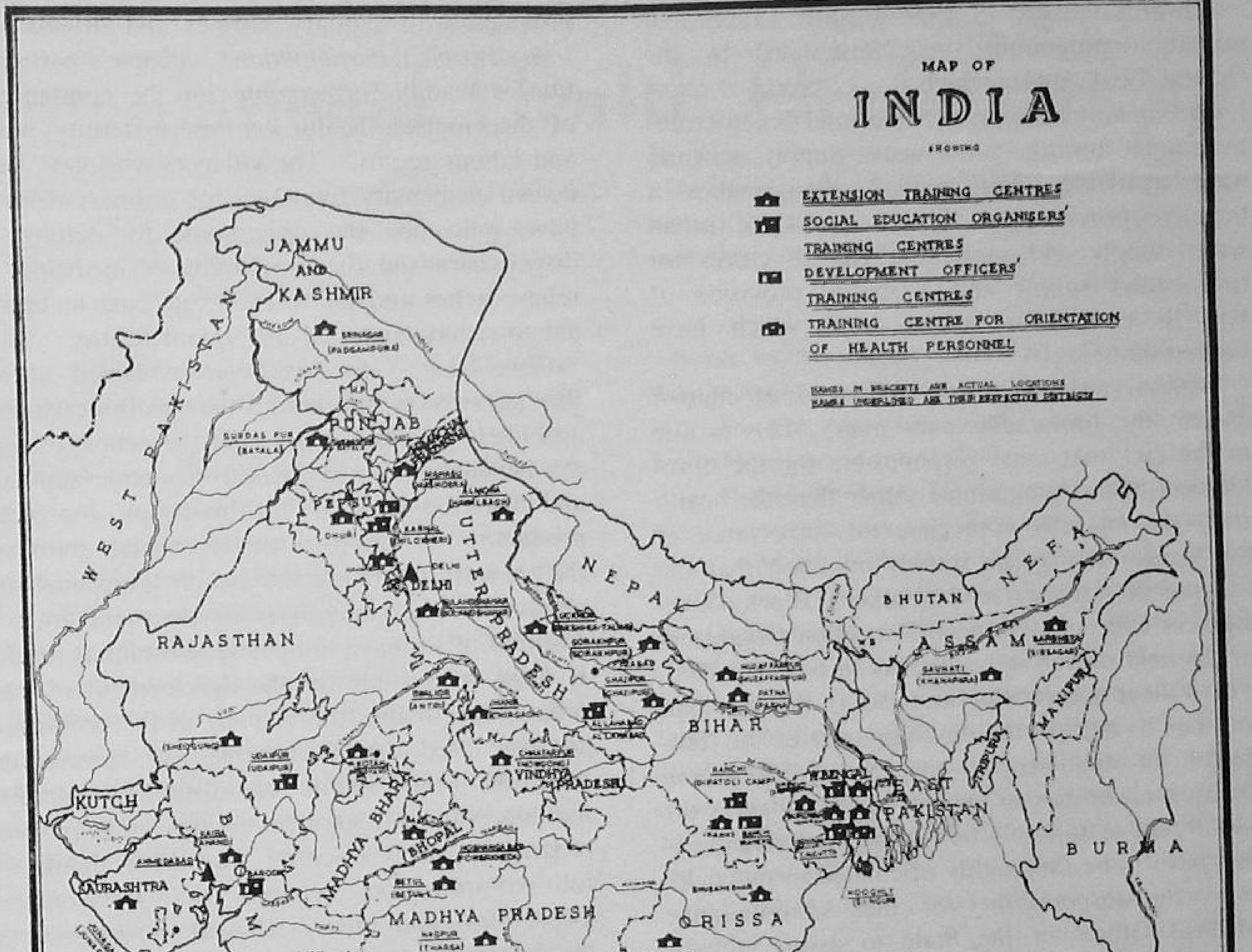
There is a certain amount of lack of co-ordination between the Department of Medical and Department of Public Health in those State, which do not have integration of the curative and preventive services at the State level. In these States, the training of nurses, midwives, etc. who have to be employed for the preventive services, has to be arranged through the Director of Medical Services/Surgeon-General, even the services of the medical officers have to be obtained on loan from the Medical Department for employment in the Primary and Secondary Health Centres.

The Health Survey and Development Committee (Bhore Committee) appointed by the Govt. of India in 1944 recommended that there should be integration of curative and preventive services in all the States and that the Administrative Medical Officer should possess public health qualification and experience. Unfortunately, a few States have not accepted the recommendations for the integration of their health services and those which have accepted, have not been able to appoint an Administrative Medical Officer with public health qualifications, with the result that the preventive services particularly in the field of environmental sanitation, have not received the attention they deserve.

2. *Recruitment of Personnel and Training*:—There has been some difficulty in persuading the doctors to go to the rural areas. This reluctance was due to low scales of salaries, lack of private practice and lack of adequate accommodation in the rural areas. The majority of States have succeeded in counteracting these difficulties by offering adequate salary, non-practising allowance, rural allowance, higher initial start in the existing pay scales and suitable accommodation. Unfortunately pay scales of doctors have been fixed low with the assumption of a scope for private practice. But the community development work is of an integrated pattern and there is neither scope nor time for private practice. One State has recently issued a Government Order that all medical officers in the State Service after an initial posting of 2 years in an urban hospital will have to serve for a period of 3 years in the rural areas This is an interesting condition of service and every one will take his turn and provide essential services to the people in the rural areas.

With regard to staff for maternity and child welfare work, i.e. health visitors and midwives, in addition to the difficulties mentioned above, there has been lack of trained personnel. To meet this shortage, the Central Ministry of Health have sponsored various training schemes offering substantial financial assistance and stipends for the trainees. Some States have taken advantage of these facilities while others are still considering the matter, even though these schemes were initiated over two years ago. Obviously the "sense of urgency" which is essential for such a programme is somewhat lacking. State Governments are also finding difficulty in recruiting adequate staff with prescribed qualifications. Some State Governments do not encourage outsiders and the question of 'mulky and non-mulky' comes in.

3. *Environmental Sanitation*:—Progress in the field of environmental sanitation is now gaining momentum. Here again the question of drinking water supply takes precedence over the requirements. Water has always been a primary necessity of life but it is only now that people have begun to realise that is only the safe water that will help in the prevention of large incidence of gastro-intestinal diseases, like typhoid, dysentery, cholera, etc. For execution of this work a good number of States have a Public Health Engineering Organization and yet this organization is not under the Department of Health in all these States. Again some States have a separate 'well-sinking Department' which is an entirely independent organization. It has not sufficiently been realised even by the Executive Engineers that siting and construction of a sanitary well is one of the very important duties of the Health Department and


MAP OF
INDIA
SHOWING
EXTENSION TRAINING CENTRES
SOCIAL EDUCATION ORGANISERS' TRAINING CENTRES
DEVELOPMENT OFFICERS' TRAINING CENTRES
TRAINING CENTRE FOR ORIENTATION OF HEALTH PERSONNEL
BLOCK LEVEL EXTENSION OFFICERS' (COOPERATION) TRAINING CENTRES
BLOCK LEVEL EXTENSION OFFICERS' (COTTAGE INDUSTRIES) TRAINING CENTRES
JAMMU AND KASHMIR
WEST PAKISTAN
PUNJAB
PEPSU
DELHI
UTTER PRADESH
NEPAL
BHUTAN
NEFA
ASSAM
MANIPUR
BIHAR
EAST PAKISTAN
BURMA
RAJASTHAN
KUTCH
SAURASHTRA
BOMBAY
MADHYA BHARAT
BHOPAL
VINDHYA PRADESH
MADHYA PRADESH
ORISSA
HYDERABAD
ANDHRA
MYSORE
COORG
MADRAS
ARABIAN SEA
BAY OF BENGAL
CEYLON

it is a simple matter to get the site approved by the District Medical Officer and obtain a blue-print for a sanitary well.

Towards the end of 1954 a water supply and sanitation programme was formulated by the Central Govt., under which Rs. 12 crores as loans for urban water supply schemes and Rs. 6 crores as grants towards rural water supply schemes were available. The Second Plan makes a tentative provision of Rs. 53 crores for urban water supply and sanitation, Rs. 28 crores for rural water supply and a special provision of Rs. 10 crores for urban areas which have corporations.

With regard to hygienic disposal of human excreat the response is very poor. This is due to the fact that these respopnsible for the development of this programme (other than the health staff) do not fully appreciate the importance of this issue. It may be frankly admitted that the training of Village Level Workers, Block Development Officers and Social Education Organizers in the field of public health has to be intensified. The Village Level Worker, who is the key-man and has to help in the developpment of the 'felt-needs' of the people and Social Education Organizer who has to explain to the villagers the social evils of soil pollution and water contamination have to be thoroughly orientated in this field. It is the responsibility of the Administrative Medical Officer of the State to assure himself that the training imparted to the Village Level Workers and Social Education Organizers in public health and environmental sanitation at the Training Centres in his State is satisfactory and that during the training they are made to practice what is taught in the class-room and what they are expected to popularise in the villages.

Health education is another important factor which will help in the improvement of environmental sanitation and must be an integral part of all development programmes for the community. In view of the fact that there are no scavengers in the rural areas, it is necessary that the design of the sanitary latrine should be such, where there is no foul smell and also it does not provide a breeding place for the flies. Unfortunately, authorities responsible for drawing plans of the rural schools very seldom planned for a latrine and a urinal. It has now been recommend that all public institutions especially Primary, Secondary and Basic Schools should be provided with sanitary latrines and urinals.

4. *People's Participation*:—People's participation is readily forthcoming for the construction of dispensaries, health centres, maternity wards and labour rooms. The villagers who have been denied elementary treatment for ordinary diseases have welcomed the programme for setting up dispensaries and the availability of medicines to relieve aches and pains, fever, etc. and maternity aid to reduce maternal and infant deaths.

Conclusion:—As has been explained above, the necessity of developing the health services is absolutely essential if we want the people to reap the benefit of their increased economic standard and also the need of healthy people for better production to improve the economic status of the people. Training of health personnel for working in the community development areas is essential, if we have to achieve substantial results. If those responsible for the development of total programmes realise the urgency of the problem, I am convinced that the people will exercise the "right to live" in the not too distant future. For the successful development of this multi-purpose programme, it is essential that there should be full co-ordination between the Development Department and other technical departments at the State, District and Block level. Further all the medical and health services in the area must be under a unified administrative control. A number of States have attained a good measure of such co-ordination, co-operation, and a unified administrative control. Their progress towards the attainment of objectives is most promising. States where co-ordination between the departments is still lacking and where there is no unified administrative control in the field of medical and public health, the progress of the development of health programmes is slow.

Medical and public health staff must make full use of the Village Level Worker and Social Education Organizer in the development of rural health programmes. The Community Development Programme is a team work where each member has to play his role in a co-ordinated manner.

International Health Organisations

(1) WHO'S ROLE IN INDIA

COL. C. MANI,
Regional Director, South East Asia

Since the establishment of the WHO Regional Office for S. E. Asia at New Delhi early in 1949, WHO has been increasingly associated in one way or another with the major public health programmes launched by the Government of India. The total number of health projects in India in which the Government and WHO will have worked together, up to the year 1957-58, will be 124. All these projects function strictly within the framework of the national health services, WHO's part being limited to giving expert advisers and supplies that are not available locally. Supplies and equipment for many such projects are also furnished by UNICEF upon the technical recommendation of WHO.

Scope of Activities

Work under these projects has covered such fields as communicable disease control, particularly malaria and tuberculosis, mother and child health, environmental sanitation, professional and technical training especially for doctors and nurses, health education of the public, trachoma control, dental education and vital and health statistics.

A vital common denominator underlying WHO's activities in all these different fields is the training of national health workers at all levels. Apart from training facilities available at the various prpojects, WHO experts have been assigned to many nursing schools and medical colleges and other training institutions to upgrade the teaching in various specialities.

Fellowships

The training programme is supplemented by the grant of fellowships to selected candidates for advanced training and experience abroad. During the last seven years 134 fellowships have been awarded to Indian nationals. A further 32 fellowships are being awarded in 1956.

Some of the major health activities in which WHO has co-operated with the Government of India during the last seven years are listed below:

In 1949 four demonstration and training projects were set up in the Terai area U.P., Jeypore Hills (Orissa), Malnad (Mysore) and Ernad (Madras). The projects demonstrated the effectiveness and practicability of residual DDT spraying, with pronounced success in the highly endemic U.P. Terai. WHO aid terminated with the completion of the demonstration projects in 1953 but the work done contributed to the subsequent building up by the Government of India of a country-wide malaria control plan now covering almost all of its 29 States and aiming at giving protection to 200,000,000 people.

Tuberculosis

Modern methods of tuberculosis diagnosis and control were demonstarated at three centres set up with WHO assistance at Delhi, Trivandrum and Patna between 1951 and 1953. These centres are now functioning under the exclusive responsible of the Government.

WHO and UNICEF participated in India's mass BCG programme, launched in July 1951. WHO provided four experts to help Government run the programme and train BCG technicians. WHO aid was withdrawn in 1955 while the programme—the largest ever in the world—continues to progress according to the Government's plans. All the supplies for this programme were given by UNICEF.

With recent advances in chemotherapy radical changes are occurring in the organization of control programmes which can now be based on immunization and domiciliary drug treatment of infectious cases as against expensive treatment in specialized institutions beyond the means of Asian countries. In response to these developments

WHO activities are now directed to developing practical and inexpensive measures for organizing the control of tuberculosis on a domiciliary basis. A project rejecting the new policy is now functioning at Madras.

VD and Yaws Control

At a demonstration and training centre established at Simla in 1949 16 teams from various Indian States were trained. Assistance was provided for upgrading the VD department of the Madras General Hospital. The cardiolipin plant in Calcutta, now in its production phase, also received assistance from UNICEF and WHO.

A yaws control pilot project was started in Madhya Pradesh in 1952 with the help of a WHO expert and later extended to Hyderabad, Andhra and Orissa.

Plague

A research project seeking to discover the reservoir of plague in Uttar Pradesh has resulted in the highly interesting discovery that the wild rodent known as *tatera indica* and not the house rat is responsible as the reservoir of the infection in parts of U.P.

Maternal and Child Health and Nursing

Ten MCH-nursing projects in various States of India have developed with assistance from WHO and UNICEF over the past several years. A team of six international staff is assisting the MCH department at the All-India Institute of Hygiene & Public Health, Calcutta, to provide additional facilities in teaching and to develop a training field in paediatrics and public health nursing for the students of the Institute.

Eight nurses-training projects have received assistance. The aim is to improve and expand facilities for graduate and under-graduate training of nurses and midwives and related health personnel at various institutions in the country.

Pharmacology

A WHO professor assisted in the development of research in pharmacology, including indigenous medicine, at the School of Tropical Medicine, Calcutta. The department of pharmacology in the Seth G. C. Medical College, Bombay, has been recognized on modern lines with the assistance of a WHO professor who served the college for two years.

Health Statistics

A demonstration and training unit in health statistics has started functioning at Nagpur. The aim of the project is to demonstrate the scope of functions of health statistics departments from the collection of data to their final analysis and use in the formulation of health plans.

The proposed programme for 1958 lays stress on health education and environmental sanitation. Assistance to about seven health education projects has been provided for in the programme for 1957-58. This will involve provision of WHO health educators to a number of selected States and to the All-India Institute of Hygiene and Public Health, five fellowships, and a diploma in health education.

Andhra State will receive assistance in its plans to develop public health and nursing education and the States of Madras, Rajasthan and Punjab in building up their public health programmes.

Four environmental sanitation projects are programmed for the immediate future involving provision of four WHO public health engineers to four States, assistance to pilot projects in two States and carrying out a refresher course for public health engineers.

Provision has also been made to provide WHO professors of preventive and social medicine and paediatricians to selected medical colleges.

(2) WORK OF THE ROCKEFELLER FOUNDATION IN INDIA

DR. M. C. BALFOUR,
Associate Director

The work of The Rockefeller Foundation in India began in Madras Presidency in 1920 with hookworm studies and control measures. Since that date its representatives have continously developed health and medical programs in co-operation with the Centrl and State Governments. The early emphasis was given to public health services, field studies and the training of personnel. Specific projects have been assisted from time to time for the study and control of hookworm and malaria, the development of rural health centres, rural sanitation, nursing education,

nutrition, and public health laboratory services; in recent years support has been given for research in virus diseases, medical education and research, and population studies.

To promote public health training, The Rockefeller Foundation contributed toward the building and equipment of the All India Institute of Hygiene in Calcutta which serves as a public health training and research centre on a nation-wide basis. In all its co-operative projects the preparation of trained personnel has received special attention. Foreign fellowship grants have assisted in training many of the key medical and health leders in India.

At present The Rockefeller Foundation is co-operating with the Indian Council of Medical Research which has established a Virus Research Centre in Poona, the Foundation furnishing equipment, supervisory staff and some funds.

Although staff representation in India has been confined to the medical and public health fields, other divisions of The Rockefeller Foundation, viz., Natural Sciences and Agriculture, Social Sciences, and The Humanities, have also granted some fellowships and other types of assistance in their respective fields.

Since 1920, a total of 22 staff members have been in residence in India for periods varying from 3 to 8 years. During 1954-55, there were seven staff members stationed in India. At present four staff members are in residence, two doctors, one sanitary engineer and one nurse.

During 1955 as in previous years co-operation was maintained with the Government of India and various State Governments in carrying out the Medical Education and Public Health program of The Rockefeller Foundation. Delhi continued as the headquarters of the Regional Office for the Far East, with Dr. M. C. Balfour in charge and Dr. R. K. Anderson as Representative in India.

During the year the field staff in India of the Foundation consisted of four medical officers, one sanitary engineer and one nurse.

In the effort to improve and expand medical education in India emphasis was placed on the training of more and better teachers in medicine through local fellowships, foreign fellowships and travel grants and grants-in-aid to selected departments. The ICMR/RF local fellowship program showed considerable progress; 8 fellows completed their training, 43 were undergoing training and 21 others were awarded local fellowships. To afford advanced graduate training and the benefit of foreign contact and experience to present and prospective leaders in medical education and research, 9 foreign fellowship and travel grants were given. During the year 10 grants-in-aid, totalling $172,600, were made to medical and nurses training centres.

One foreign fellowship in public health and two fellowships in nursing education were awarded.

Recognizing the importance in medical education of the teaching of preventive and social medicine in the medical colleges of India, a contribution in this direction was made by the promotion and support of a conference of those who are in a position to exert leadership in this field. Nine professors of preventive medicine, one medical college dean, three representatives of Central Government and five from international agencies participated. This three-day meeting held in Delhi, March 21-23, 1955 represented an informal and free exchange of views and experience by the participants. In part the purpose was to help prepare for the general conference on undergraduate medical education called by the Government of India and held in November 1955.

The subject of population growth and control continued as a primary interest of Dr. Balfour. A new study under the auspices of the All India Institute of Hygiene at Calcutta, was developed and finances were provided by the Population Council of New York. The field testing of simple methods of family limitation, education of the public, implementation by a minimum of technical or professional personnel at the village level and a broader health education and public health approach, are the main features of this study. The RF continued its support of the India-Harvard-Ludhiana Population Study.

Mr. F. W. Knipe, sanitary engineer, was on assignment to the Malaria Institute of India in its malaria training and control program including work connected with the National Malaria Con-

tral Program. Miss L. A. Johnson continued on assignment as nursing consultant to Travancore-Cochin Government for the up-grading of the nursing school in the new medical centre in Trivandrum.

In the year under review, which was the third full year of its establishment, the Virus Research Centre, Poona, carried on its all-India role of field investigations, collections and virological study of human disease problem from many parts of the country. In addition to the arthropod borne neurotropic virus infections, work continued on enteric viruses as a possible cause of Jamshedpur Fever and on the encephalitis in children which occurred in epidemic from last year in north India.

Visitors to India during the year from The Rockefeller Foundation included three Vice-Presidents, Mr. Lindsley F. Kimball, Dr. Warren Weaver and Dr. Alan Gregg, a member of the Board of Trustees, Mr. Chester Bowles; and Doctors George Harrar, Robert Chandler, Richard Bradfield and Paul F. Russell. Dr. Gregg was a special invitee of the Government of India to participate in the medical education conference sponsored by them.

(3) THE INDO-AMERICAN HEALTH AND SANITATION PROGRAMME

Dr. John C. Hume

Chief Health Director, T.C.M./India Health Division, New Delhi

I. *Introduction*

The Indo-American Co-operation Health and Sanitation Programme dates from the signing of the overall agreement between the Governments of India and the United States of America on January 5, 1952. Since that time the two countries have signed five projects agreements in the field of health and sanitation in support of India's Five Year Plans.

From the beginning of the programme to June 30, 1956, India has subscribed a total of appproximately Rs. 108 crores ($ 226 million) and the United States a total of approximately $ 31 million (Rs. 14 crores) for these health projects. (See Chart I showing total Indo-American Programme by Field).

In general, the United States contribution to this joint effort is used to provide American technical specialists (See Chart 2) and training for Indian technicians overseas (See Charts 3 and 6) and to buy and transport to ports of entry, equipment and supplies not readily available in India (See Chart 4). Rupee expenditures are mainly for within-India transportation and handling costs of imported equipment and supplies, salaries of Indian personnel and construction costs.

The planning and the implementation of the Indo-American health and sanitation projects have been guided by the following general aims:

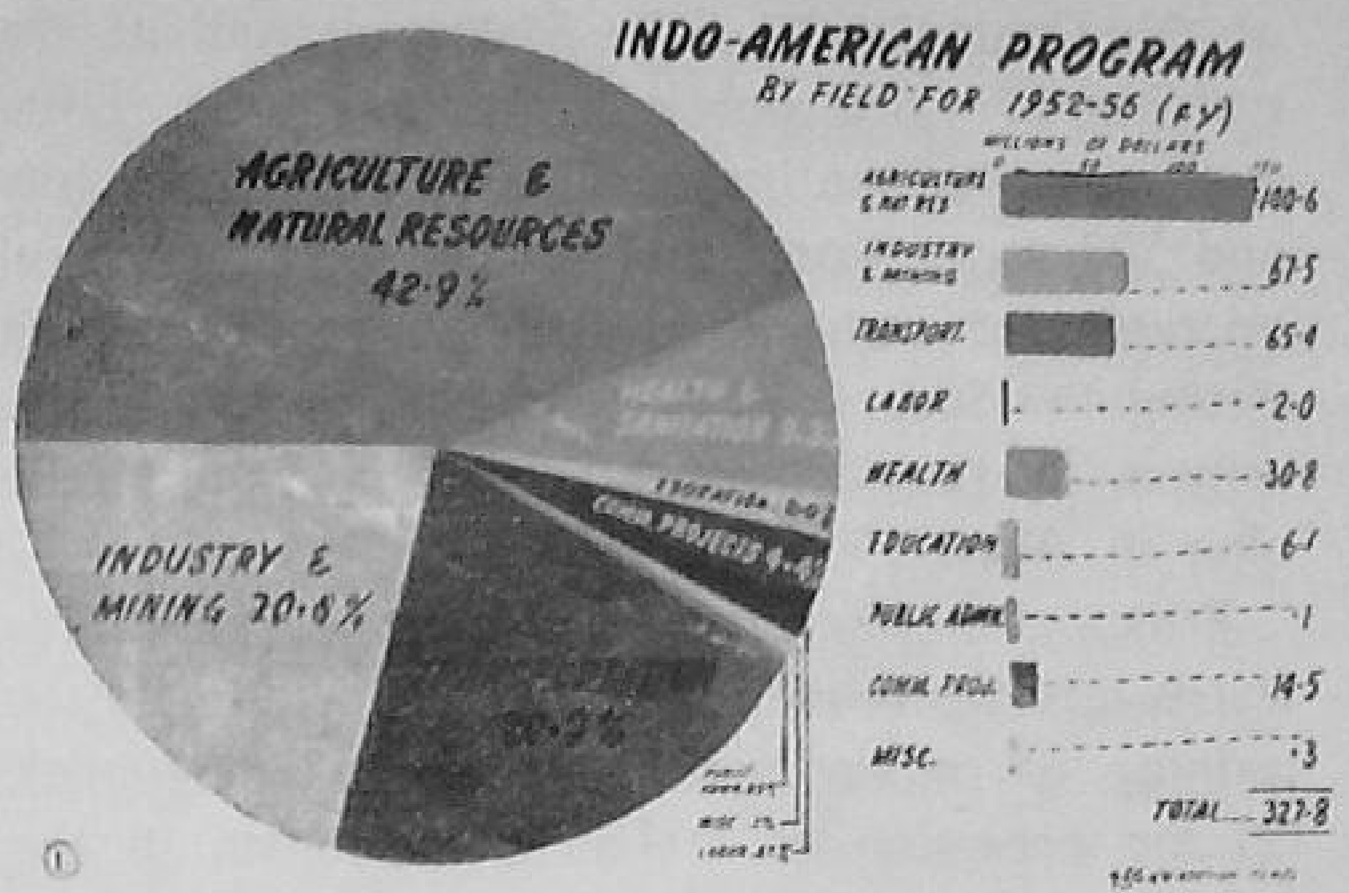
(a) to assist in strengthening the Central Ministry of Health;
(b) to assist in improving the efficiency and effectiveness of relationships between the Central and State Governments in the solution of public health problems; and
(c) to assist the Central Government in the solution of health problems which are national in scope, are amenable to control, and can in the future be carried forward by the State and Central Ministries without outside assistance.

An adequate account of how the Health Division of TCM has attempted to implement these aims along with a necessary appraisal of what still remains to be done to realize these goals necessarily would require much more space that what is available in the Association's Souvenir. Accordingly, each of the co-operative projects which have composed the Indo-American Health Programme are described briefly below:

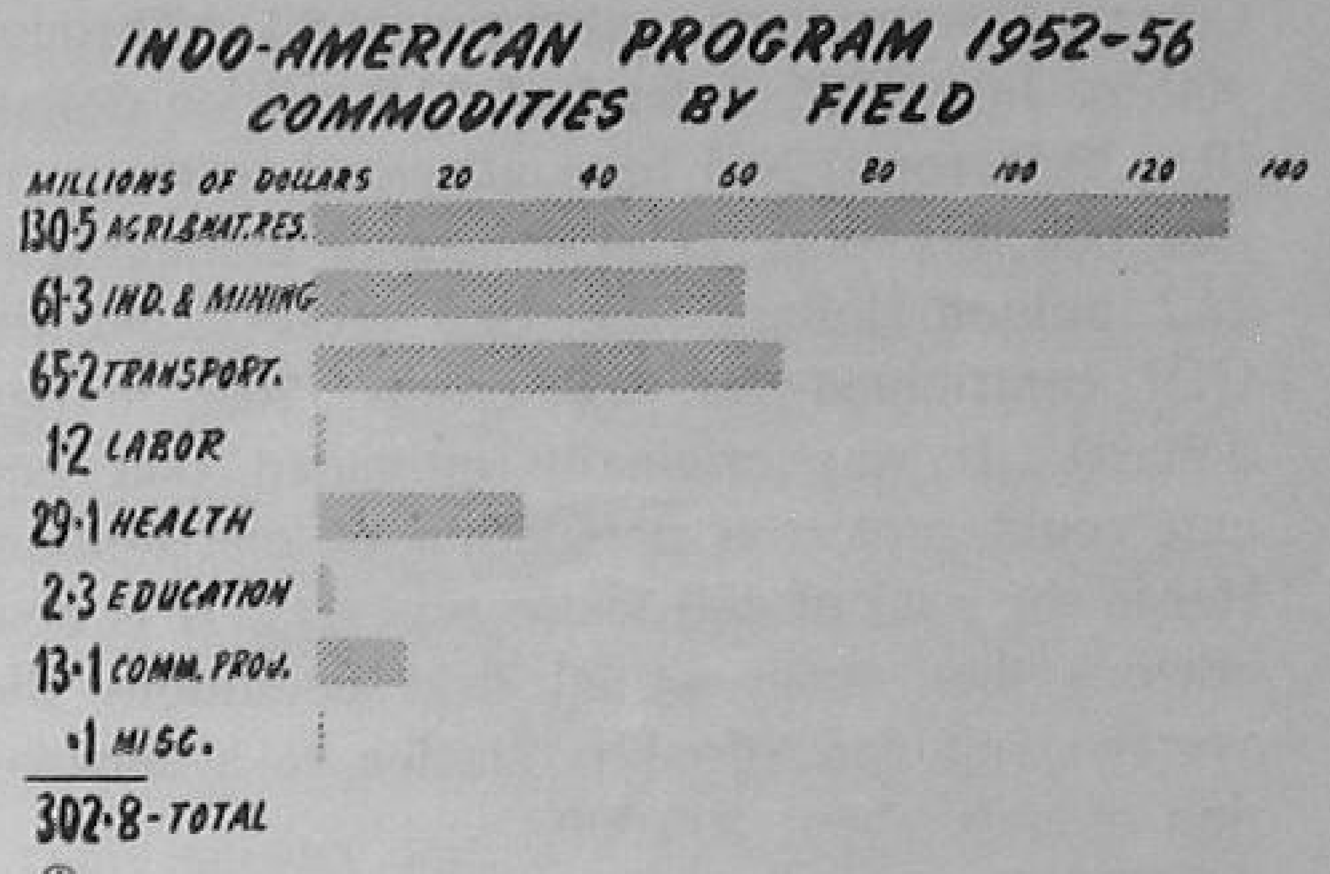
II. *National Malaria Control*

This project meets all major criteria, namely; it is national in scope, the disease is amenable to control, and the program can in the future be carried forward by the States and the Union Ministry without outside assistance. The National Malaria Control programme was covered by the ninth operational agreement entered into by the Governments of India and the United States on June 12, 1952. Supplemental agreements have been executed in each subsequent fiscal year.

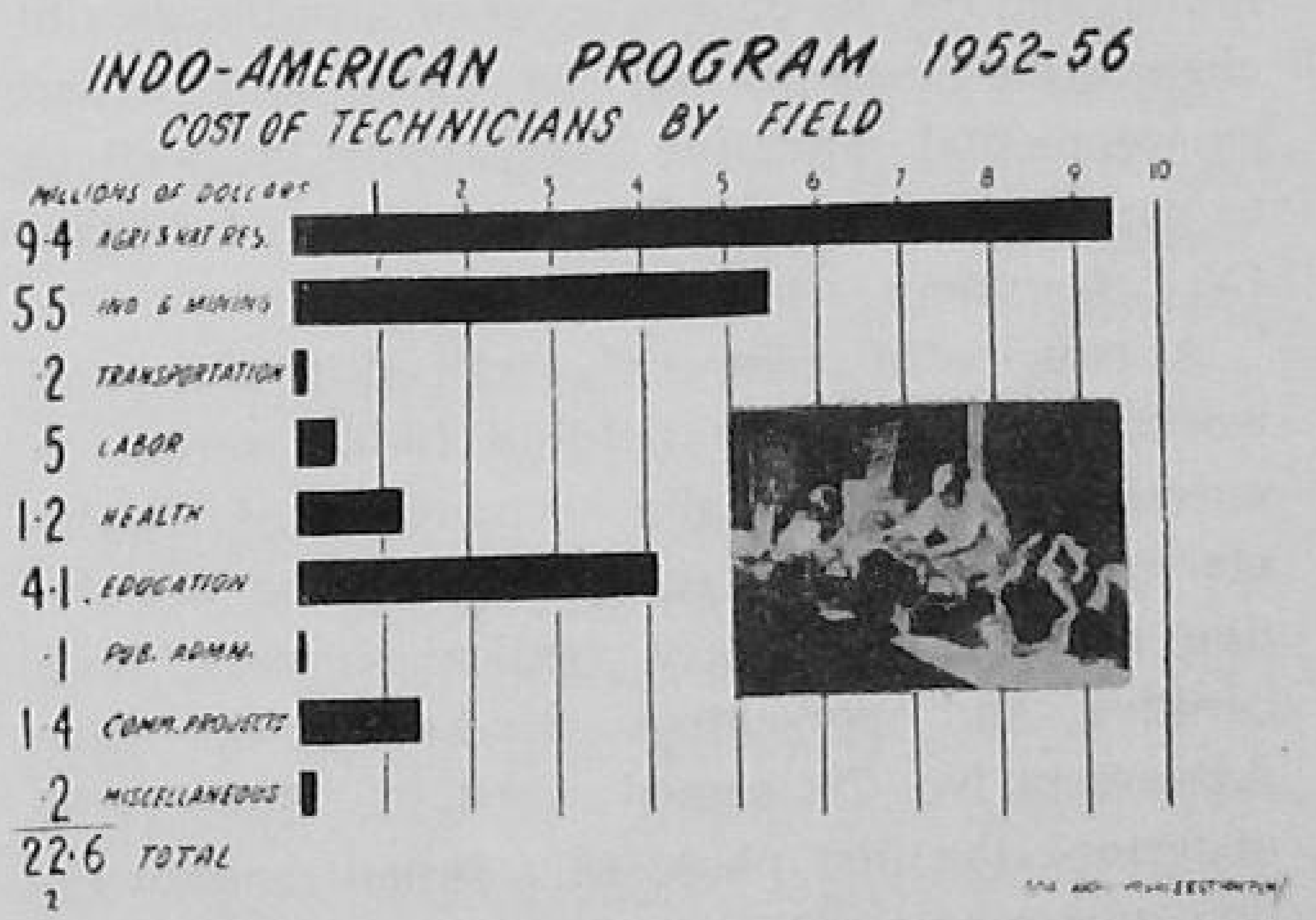
Under the co-operative project, a nation-wide organization was established under the leadership of the National Malaria Institute. Each State has a Malaria Control Organization. Support for the project comes from the State and

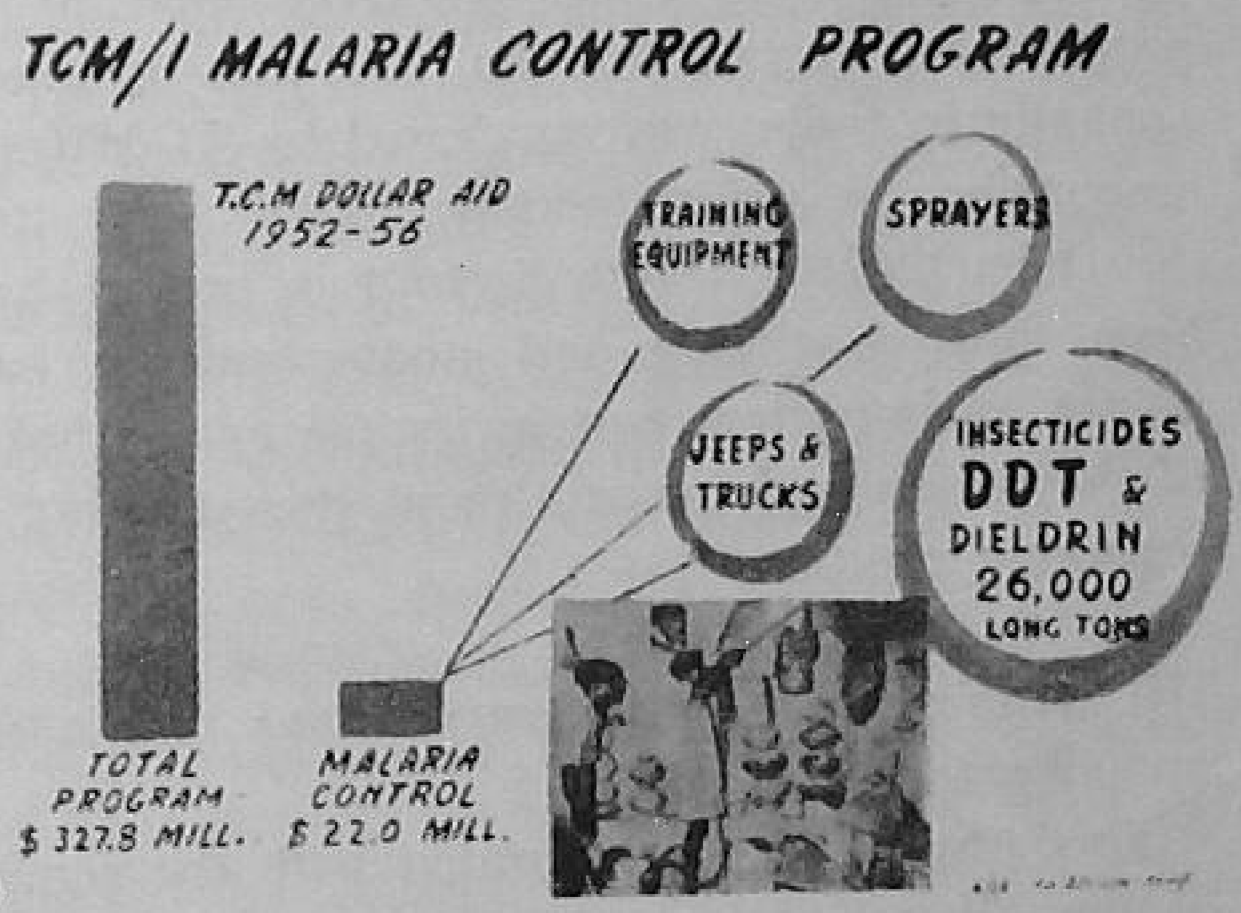

INDO-AMERICAN PROGRAM
BY FIELD FOR 1952-56 (F.Y.)
AGRICULTURE & NATURAL RESOURCES 42·9%
INDUSTRY & MINING 20·6%
MILLIONS OF DOLLARS
TRANSPORT. 65·4
LABOR 2·0
HEALTH 30·8
EDUCATION 6·1
PUBLIC ADMN. 1
COMM. PROJ. 14·5
MISC. ·3
TOTAL 327·8

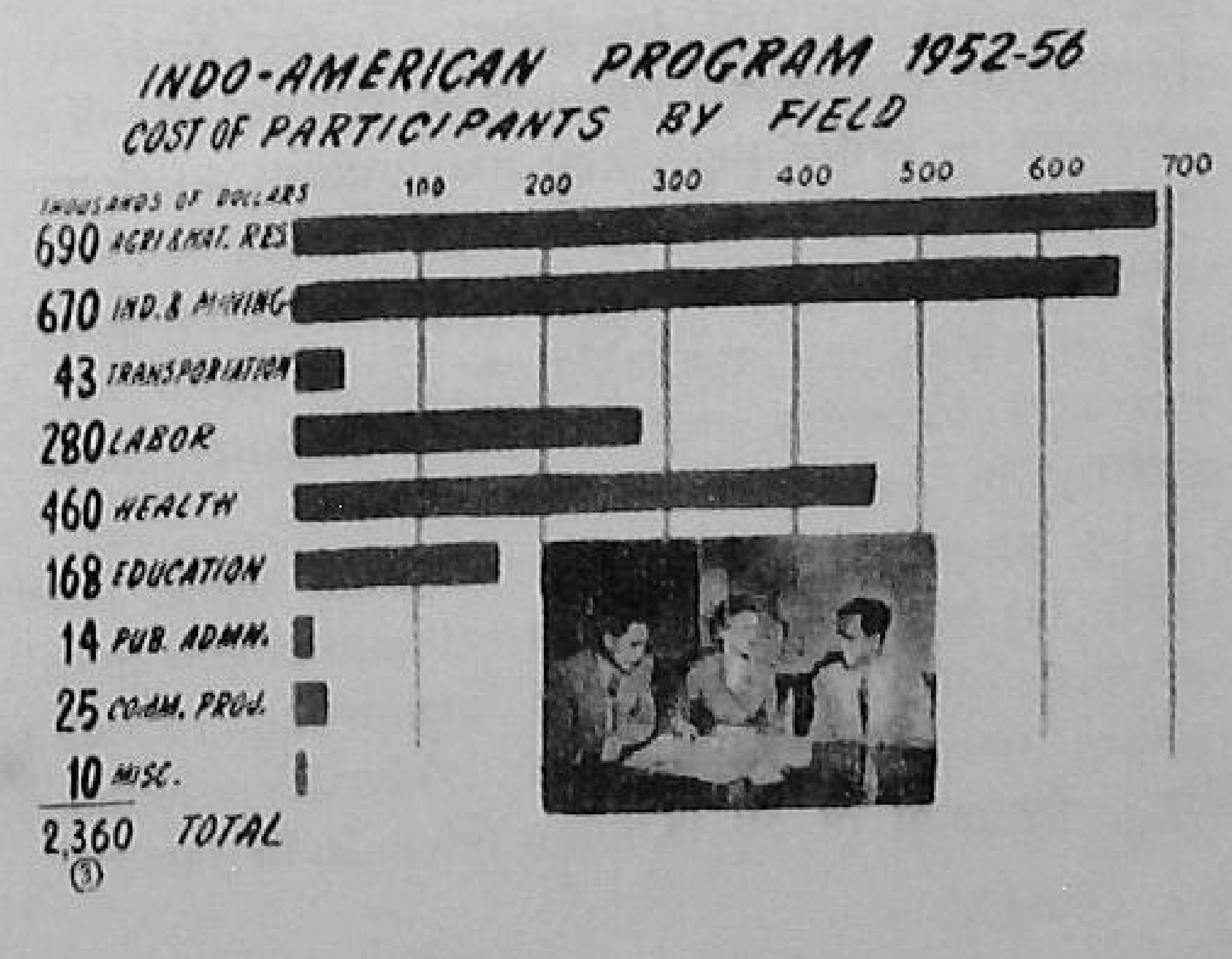
①


INDO-AMERICAN PROGRAM 1952-56
COMMODITIES BY FIELD
MILLIONS OF DOLLARS 20 40 60 80 100 120 140
130·5 AGRI.& NAT. RES.
61·3 IND. & MINING
65·2 TRANSPORT.
1·2 LABOR
29·1 HEALTH
2·3 EDUCATION
13·1 COMM. PROJ.
·1 MISC.
302·8 - TOTAL

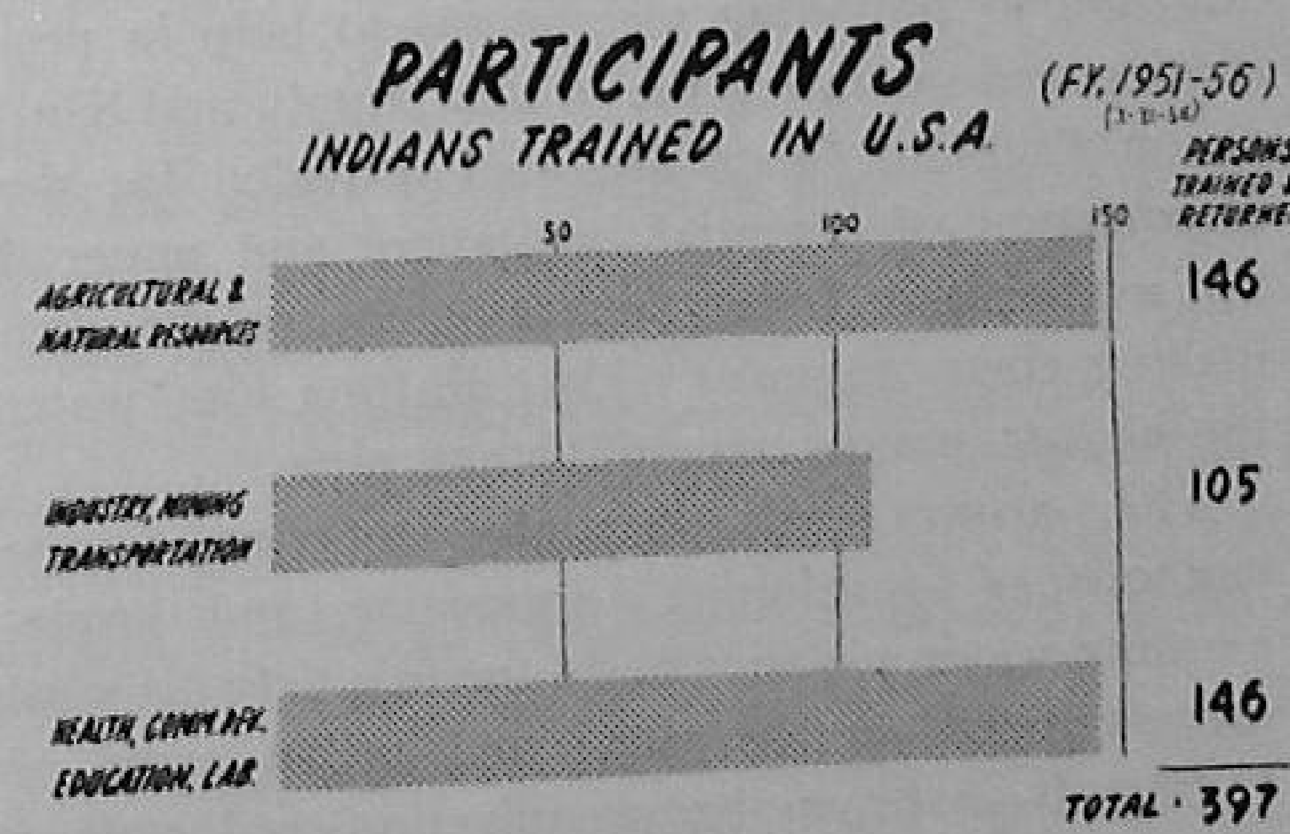
④


INDO-AMERICAN PROGRAM 1952-56
COST OF TECHNICIANS BY FIELD
MILLIONS OF DOLLARS 1 2 3 4 5 6 7 8 9 10
9·4 AGRI.& NAT. RES.
5.5 IND. & MINING
·2 TRANSPORTATION
·5 LABOR
1·2 HEALTH
4·1 EDUCATION
·1 PUB. ADMN.
1·4 COMM. PROJECTS
·2 MISCELLANEOUS
22·6 TOTAL


TCM/I MALARIA CONTROL PROGRAM
T.C.M. DOLLAR AID 1952-56
TRAINING EQUIPMENT
SPRAYERS
JEEPS & TRUCKS
INSECTICIDES DDT & DIELDRIN 26,000 LONG TONS
TOTAL PROGRAM $ 327.8 MILL.
MALARIA CONTROL $ 22.0 MILL.


INDO-AMERICAN PROGRAM 1952-56
COST OF PARTICIPANTS BY FIELD
THOUSANDS OF DOLLARS 100 200 300 400 500 600 700
690 AGRI.& NAT. RES.
670 IND. & MINING
43 TRANSPORTATION
280 LABOR
460 HEALTH
168 EDUCATION
14 PUB. ADMN.
25 COMM. PROJ.
10 MISC.
2,360 TOTAL

③


PARTICIPANTS (F.Y. 1951-56)
INDIANS TRAINED IN U.S.A.
50 100 150
PERSONS TRAINED & RETURNED
AGRICULTURAL & NATURAL RESOURCES 146
INDUSTRY, MINING TRANSPORTATION 105
HEALTH, COMM. DEV. EDUCATION, LAB. 146
TOTAL · 397

⑥

Central Governments and from TCM. Through 30th of June 1956, a total of 42.9 million dollars (Rs. 20.5 crores) had been allocated to this project. Of this total, TCM assistance amounted to 22.2 million dollars (Rs. 10.6 crores) and the GOI contributed Rs. 9.9 crores (20.7 million dollars). It was originally estimated that one unit could protect a population of one million. Hence the goal of 200 teams was set. It is now obvious that under actual field conditions the average unit can afford protection to a population of only about 800,000.

TCM funds committed to date have covered the cost of prpactically all imported supplies and equipment used in this programme. For each of 200 units sanctioned, these funds have provided jeeps, power sprayers, trucks, hand compressors and stirrup pumps. All Dieldrin used in the programme, amounting to approximately 300 long tons, was provided through TCM funds. Through June 30, 1956, all DDT used in the programme, except for the 700 tons produced annually in India, was purchased by TCM funds amounting to approximately 26,000 long tons. (See Chart 42). Results from this project have been most gratifying and unquestionably have played an important part in improving the health of the nation and hence also in strengthening its economic position.

III. *National Water Supply and Sanitation Program*

This project was inaugurated with the signing of the Operational Agreement No. 25 between the United States Technical Co-operation Mission and the Government of India on April 6, 1954. The basic purpose of the Technical Assistance phase of this project is to promote public health engineering activities and to establish operational techniques and design standards for carrying out a nation-wide programme. In addition to providing technicians to help in promoting and operating the Water Supply and Sanitation Program funds are also provided for the importation of essential equipment and material not available in India, such as jeeps, trucks, well drilling rings, engineer's kits, drafting kits, water testing kits, pumps, windmills and pipe.

The project will continue to demonstrate methods of developing, organizing and implementing water supplies and human waste disposal improvements in the rural and urban areas of India. It involves the organization and staffing of Public Health Engineering Organizations both at the Centre and in the States, as well as the training of 1,050 public health engineers, 1,800 engineering subordinates, 750 sanitary inspectors and 500 water works and stwage treatment plant operators at institutions and numerous training during the Second Five Year Plan period begin- centres in the various States throughout India ning in April 1956.

Principal emphasis under this co-operative project is now being placed on the following: (1) the training of public health engineering personnel, (2) the provision of technical assistance in the actual field operations which includes the training of well drillers to operate the 89 well drilling rigs purchased under FY54 and WY55, (3) the carrying out of public health engineering research, (4) the development of national standards for (a) water sanitation and sewerage, (b) water quality and (c) methods of analysis of water and sewage samples, (5) the promotion of rural sanitation, and (6) the development of a public health engineering organization to carry out broad environmental sanitation programmes as well as to construct water supply and drainage facilities.

IV. *Assistance to Medical Colleges*

A paucity of adequately trained professional workers in the health field in India presents a serious obstacle to the expansion of health services, depriving large sections of the population of even elementary medical services, both curative and preventive. Under Co-operative Agreement No. 29, signed April 30, 1954, TCM undertook the first phase of a broad demonstration programme with the objective of strengthening educational and research activities in medical and allied fields.

In order to carry out the objective of this program, three approaches have been used, namely: (1) the provision of visiting faculty and other technicians to advise and assist in the organization of departments, curriculum planning, research activity and teaching; (2) the sending abroad for specialized training of regular faculty members in order that they may return to their institutions prepared to give high calibre leadership; and (3) the provision of basic equipment and supplpies not available in India which are necessary to carry out adequate teaching and research in institutions.

The project has provided through June 30, 1956: (a) hospital and laboratory equipment and supplies for 28 institutions comprised of 15 medical research institutions and 4 health schools, (b) assignment of 10 U.S. technicians to institu-

tions, State Health Ministeries and the Central Health Ministry, and 13 additional U.S. technicians under active recruitment; and (c) post-graduate training in U.S. and other countries for 79 nationals in specialized fields of health and medicine.

The project proposal for the fiscal year 1957 (beginning July 1, programme. It provides for integrated intensification of technical co-operation directed to a demonstration in the up-grading of medical education. This phase of the project will be restricted possibly to six representative medical colleges and their teaching hospitals and will emphasize the strengthening of their pre-clinical and social and preventive medicine departments. TCM aid to the limit of funds available will provide for completion of such continuing activities as were committed during the first phase of the programme together with any new activities which can be considered essential in support of the specific up-grading demonstration. Plans for FY57 project will take into consideration also the possibility of provision for public health nursing and health education programmes to be implemented under separate co-operative projects for each of these respective fields.

V. *National Filaria Control*

It is well known that the disability caused by the acute febrile episode and the chronic end-stage of elephantiasis inevitably results in a tremendous drain on available man-power. For that reason an Operational Agreement between TCM and the Government of India was signed March 23, 1955 with these objectives: (1) to demonstrate and evaluate techniques for the control of filaria; (2) to determine the extent of the filaria problem and the vectors of filariasis other than those already known; (2) to train personnel in methods and techniques of filaria control; (4) to conduct research studies as indicated; and (5) to provide basic information to determine the nature and extent of the filaria control programme during the Second Five Year Plan.

The initial survey and experimentation stage of the programme will provide protection to approximately 8 million people living in hyper-endemic filarious areas. In this stage, 26 control and 22 survey units will be established in the affected States and provided with essential equipment and supplies. The existing facilities of the filaria unit of the Malaria Institute of India in the Union Ministry of Health will be expanded to enable it to provide training facilities, consultation services, research facilities and overall direction of the program.

Through June 30, 1956, TCM aid under this co-opeprative project provides for (1) insecticides, drugs and transpoprt for 26 control units; (2) training of two Indian Nationals abroad in parasitology and entomology; and (3) the services of two U.S. technicians, a public health engineer and an entomologist.

VI. *Health Instruction Training Centres*

This project initiated by agreement No. 30, dated 5th June 1954, recognized the importance of training in basic public health, and of health education for instructors at village worker training centres as well as for others dealing with health programmes in Community Projects. Three health training instruction centres are being established at Poonamallee, in Madras, Singur in West Bengal and Najafgarh in Delhi.

Under this project $ 37,000 was committed by the Technical Co-operation Mission for importation of necessary equipment and supplies for the three training instruction centres to supplement a separate agreement between the Government of India and the Ford Foundation.

Since the establishment of the WHO Regional Office for S.E. Asia at New Delhi early in 1949, WHO has been increasingly associated in one way or another with the major public health programmes launched by the Government of India. The total number of health projects in India in which the Government and WHO will have worked together, up to the year 1957-58, will be 124. All these projects function strictly within the framework of the national health services, WMO's part being limited to giving expert advisers and supplies that are not available locally. Supplies and equipment for many such projects are also furnished by UNICEF upon the technical recommendation of WHO.

Scope of Activities

Work under these projects has covered such fields as communicable disease control, particularly malaria and tuberculosis, mother and child health, environmental sanitation, professional and technical training especially for doctors and nurses, health education of the public, trachoma control, dental education and vital and health statistics.

A vital common denominator underlying WHO's activities in all these different fields is the training of national health workers at all levels.

Apart from training facilities available at the various projects, WHO experts have been assigned to many nursing schools and medical colleges and other training institutions to upgrade the teaching in various specialities.

Fellowships

The training programme is supplemented by the grant of fellowships to selected candidates for advanced training and experience abroad. During the last seven years 134 fellowships have been awarded to Indian nationals. A further 32 fellowships are being awarded in 1956.

Some of the major health activities in which WHO has co-operated with the Government of India durin the last seven years are listed below:

Malaria Control

In 1949 four demonstration and training projects were set up in the Terai area of U.P., Jeypore Hills (Orissa), Malnad (Mysore) and Ernad (Madras). The projects demonstrated the effectiveness and practicability of residual DDT spraying, with pronounced success in the highly endemic U.P. Terai. WHO aid terminated with the completion of the demonstration projects in 1953 but the work done contributed to the subsequen building up by the Government of India of a country-wide malaria control plan now covering almost all of its 29 States and aiming at giving protection to 200,000,000 people.

Tuberculosis

Modern methods of tuberculosis diagnosis and control were demonstrated at three centres set up with WHO assistance at Delhi, Trivandrum and Patna between 1951 and 53. These centres are now functioning under the exclusive responsibility of the Government.

WHO and UNICEF participated in India's mass BCG programme, launched in July 1951. WHO provided four experts to help Government run the programme and train BCG technicians. WHO aid was withdrawn in 1955 while the programme—the largest ever in the world—continues to progress according to the Government's plans. All the supplies for this programme were given by UNICEF.

With recent advances in chemotherapy radical changes are occurring in the organization of control programmes which can now be based on immunization and domiciliary drug treatment of infectious cases as against expensive treatment in specialized institutions beyond the means of Asian countries. In response to these developments WHO activities are now directed to developing practical and inexpensive measures for organizing the control of tuberculosis on a domiciliary basis. A project reflecting the new policy is now functioning at Madras.

VD and Yaws Control

At a demonstration and training centre established at Simla in 1949 16 items from various Indian States were trained. Assistance was provided for upgrading the VD department of the Madras Central Hospital. The cardiolipin plant in Calcutta, now in its production phase, also received assistance from UNICEF and WHO.

A yaws control pilot project was started in Madhya Pradesh in 1952 with the help of a WHO expert and later extended to Hyderabad, Andhra and Orissa.

Plague

A research project seeking to discover the reservoir of plague in Uttar Pradesh has resulted in the highly interesting discovery that the wild rodent known as *tatera indica* and not the house rat is responsible as the reservoir of the infection in parts of U.P.

Maternal and Child Health and Nursing

Ten MCH-nursing projects in various States of India have developed with assistance from WHO and UNICEF over the past several years. A team of six international staff is assisting the MCH department at the All-India Institute of Hygiene & Public Health, Calcutta, to provide additional facilities in teaching and to develop a training field in paediatrics and public health nursing for the students of the Institute.

Eight nurses-training projects have received assistance. The aim is to improve and expand facilities for graduate and under-graduate training of nurses and midwives and related health personnel at various institutions in the country.

Pharmacology

A WHO profesor assisted in the development of research in pharmacology, including indigenous medicine, at the School of Tropical Medicine, Calcutta. The department of ppharmacology in the Seth G. S. Medical College, Bombay, has been reorganized on modern lines with the assistance of a WHO professor who served the college for two years.

Health Statistics

A demonstration and training unit in health statistics has started functioning at Nagpur. The aim of the project is todemonstrate the scope of functioning of health statistics departments from the collection of data to their final analysis and use in the formulation of health plans.

The proposed programme for 1958 lays stress on health educations and environmental sanitation. Assistance to about seven health education projects has been provided for in the programme for 1957-58. This will involve provision of WHO health educators to a number of selected States and to the All-India Institute of Hygiene and Public Health, five fellowships, and a diploma in health education.

Andhra State will receive assistance in its plans to develop public health and nursing education and the States of Madras, Rajasthan and Punjab in building up their public health programmes. Four environmental sanitation projects are programmed for the immediate future involving provision of four WHO public health engineers to four States, assistance to pilot projects in two States and carrying out a refresher course for public health engineers.

Provision has also been made to provide WHO professors of preventive and social medicine and paediatricians to selected medical colleges.

(4) HEALTH IN COMMUNITY DEVELOPMENT

Dr. Hugh Leavell,
Consultant, Ford Foundation, New Delhi

Community development is an essential element in India's planning, both immediate and long-range. Foreign observers of the Indian program have been greatly impressed with the rapid pace and the enthusiasm with which it was undertaken, the sheer size of the operation and the insistence on continuing frank evaluation. Again and again these factors have been called unique in the world's history.

The community development pattern is aimed clearly at enlisting the people's participation in improving their way of life, with such technical assistance as may be required to bring the benefits of modern knowledge to aid in the process. This approach is sound fundamentally and it has met with such success that technical departments of government such as health and agriculture are realizing that their own technical programs will proceed faster by co-operating fully with community development than by "going it alone".

During the first years of community development agriculture received major emphasis. This was doubtless wise and national food production has exceeded the target figures. Now and in the future, however, health is to receive greater attention and more financial support.

The professional training of most health workers has not equipped them to work most effectively in a community development pattern. To partially compensate for this deficiency, three Orientation Centres for health workers were established in 1954 in connection with the health centres at Najafgarh (near Delhi). Poonamallee (near Madras) and Singur (near Calcutta). The tables show the number of trainees from each State who have already attended the two-months courses and the professions represented. The syllabus provides for basic public health instruction, as well as for instruction in community development techniques. A considerable part of the time is devoted to prpactical work in

TABLE I

ORIENTATION CENTRE TRAINEES BY STATE OF ORIGIN 1954 TO JULY 1956

State of Origin		Orientation Centres		
	Total	Poonamallee	Najafgarh	Singur
Ajmer	2	—	2	—
Andra	69	68	—	1
Assam	29	—	—	29
Bhopal	6	—	3	3
Bihar	31	—	—	31
Bombay	—	—	—	—
Coorg	46	46	—	—
Delhi	34	—	34	—
Himachal Pradesh ...	22	—	21	1
Hyderabad ...	56	55	—	1
Kutch	6	—	6	—
Madras	73	73	—	—
Madhya Pradesh ...	65	60	4	1
Madhya Bharat ...	30	—	30	—
Manipur ...	5	—	—	5
Mysore	31	31	—	—
North East Frontier Agency ...	4	—	—	4
Orissa	31	—	—	31
Pepsu	8	—	8	—
Punjab	24	—	23	1
Rajasthan ...	28	—	27	1
Saurasthra ...	58	43	15	—
Tipperah ...	5	—	—	5
Travancore-Cochin ...	46	46	—	—
Tripura	7	—	—	7
Uttar Pradesh ...	14	—	—	14
Vindhya Pradesh ...	6	—	—	6
West Bengal ...	59	—	—	59
Others	4	4	—	—
	799	426	173	200

villages. If possible, trainees come from a given state in a multi-disciplinary group, so that the physician, health visitor, sanitary inspector and midwife may have their training together and be better prepared for teamwork upon returning to their jobs.

As health work in the villages has progressed it has become evident that greater knowledge is needed if the work in environmental sanitation is to be most effective. Therefore, arrangements have been made to set up research-cum-action projects in connection with each of the three Orientation Centres. These projects will undertake to collect and evaluate the rich experience already available in many parts of India, and to work out and test in the field various types of devices such as sanitary latrines, and various health education approaches to the people. The results of these investigations will, of course, be made available for general use.

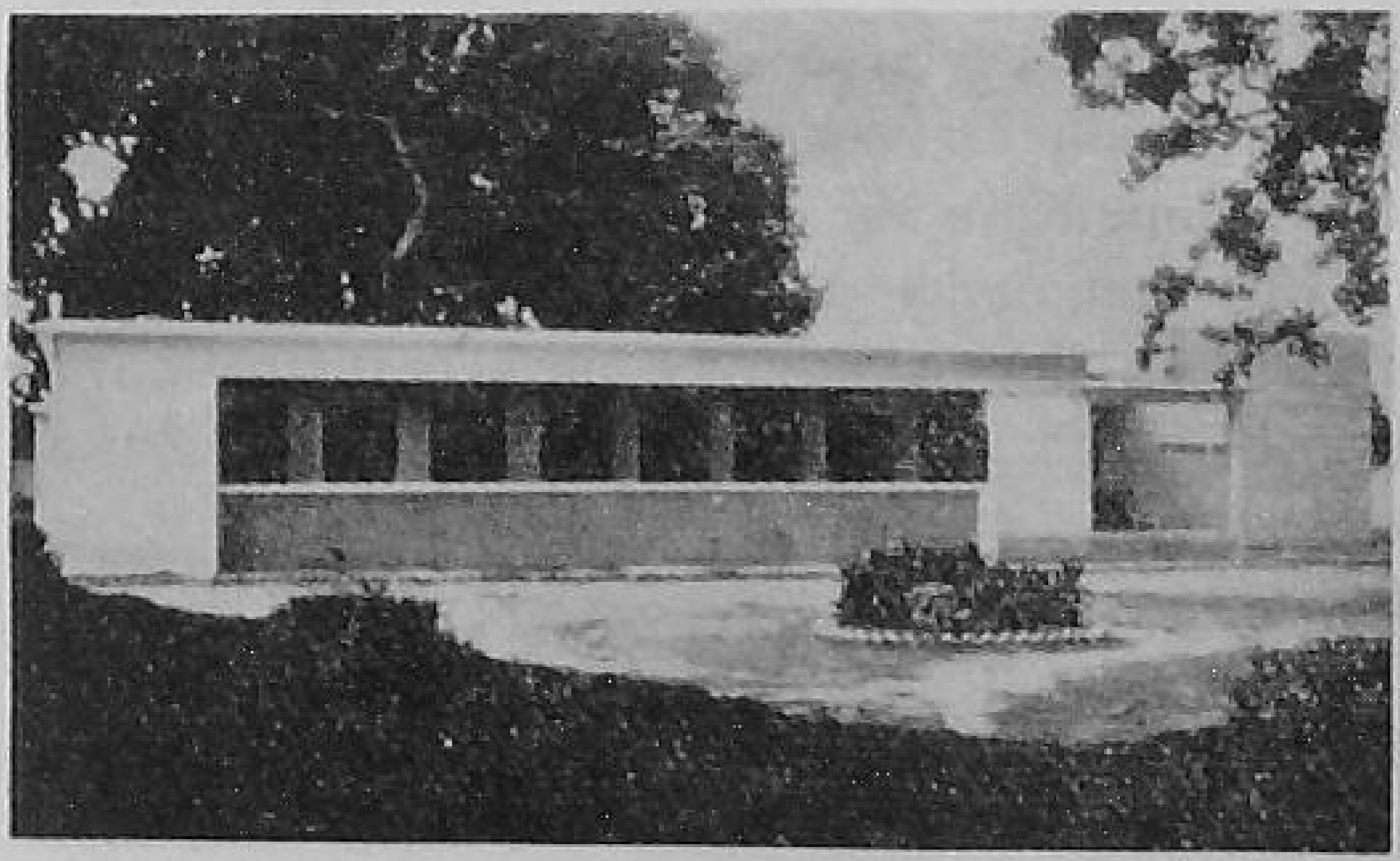
TABLE 2

Orientation Centre Trainees by Profession
1954 to July 1956

Profession	Total	Orientation Centres: Najafgarh	Poonamallee	Singur
Physicians ...	203	27	109	67
Sanitary Inspectors ...	220	60	110	50
Lady Health Visitors	75	22	39	14
Health assistants ...	31	—	—	31
Midwives and dais ...	255	62	155	38
Public Health Nurses	9	2	7	—
Others	6	—	6	—
	799	173	426	200

Najafgarh Training Centre.

Poonamallee Training Centre.



Singur Training Centre.

(5) UNITED NATIONS INTERNATIONAL CHILDREN EMERGENCY FUND

Courtesy—Mr. T. C. Davies,
Chief UNICEF Area Office, New Delhi

The symbol "UNICEF" stands for the United Nations Children's Fund—the part of the UN working to help children in need all over the world. The agency is a kind of international co-operative for children through which governments pool funds and goodwill to give children a better chance.

Source of Fund :

The governments contribute to the Fund—more than 70 countries are contributing in 1956—and UNICEF's 26-nation Executive Board for the programs. They also are committed to then apportions these resources to child care programs that will help meet some really pressing needs.

Program :

UINCEF does not actually have or run any program at all. It helps governments get their own programs going by providing essential supplies and equipment not otherwise available

inside the country. But it is the governments themselves that actually have the responsibility match UNICEF's contribution with local goods and services for the program—usually amounting to about a 2 value for every $1 UNICEF provides, as a sort of grant-in-aid or self-help operation.

Generally, those programs are supported that will help provide better conditions for children, viz. better food, better care, better health. But the needs of the world's children are vast and UNICEF's resources are limited. When it is realized that two-thirds of the world's children are in need—some 600 million of them—and that UNICEF get about $20 million in contributions each year, it becomes clear that the agency can only be effective by being very selective. So far its most spectacular achievements have been through helping to control diseases like malaria, yaws and tuberculosis that affect millions of children. Equally important, but not so spectacular or immediate in their results, are child feeding programs and efforts to get basic child care services out to the farthest reaches of rural areas.

Fields of UNICEF activities:

It is in the underdeveloped countries that the conditions are generally worst for children—there is more disease, more poverty, less food, less medical care. And it is of course countries that have the least resources—money, supplies and trained workers—to tackle these problems alone. They need international aid if they are to make any kind of broad-scale attack on problems that have been overwhelming children for centuries.

This kind of international aid to children is a fairly new concept, and is—particularly carried out on a large scale. Of course there have been many charitable movements that helped children. And people, the world over, find it difficult to harden their hearts at the sight of a hungry, sick baby. But the idea of UNICEF aid goes beyond relief, and it is not charity.

There are certain simple truths that are now beginning to be generally accepted. We all know that sick child drags down a family. Caring for him is an expensive and time-consuming thing. Perhaps he will never grow to take a full part in the family life, or to contribute anything to the community, because many die before they reach adulthood and many more are so burdened with sickness and weakened by malvourishment that they never grow to full vigour and productivity.

This burden of sickness has some bearing on all aspects of a country's life. Malaria, for instance, still affects some 250 million people a year. These people tend to live on a bare subsistence level, able to contribute little or nothing to the common good. And it is now accepted that no infected area can hope to meet the competition of non-malarious regions. It is the key agent in keeping large areas of the modern world depressed and underdeveloped. And yet today with DDT and modern techniques, malaria can be eradicated—not just controlled—but wiped out.

Economic value for aid to Children:

The humanitarian value of helping children has perhaps always been accepted. The important difference now is that countries all over the world are increasingly aware of its economic value. And it is this concept that is making more countries find ways to put more and more money and effort into child care—not just within their own borders, but—through UNICEF—in other countries as well.

Procedure for obtaining UNICEF's help:

The country must ask for help. UNICEF gives aid only on request, to governments that are prepared to make certain commitments, shoulder responsibility and really try to solve

Health visitor visiting a mother.

ASST ISA NCE FURNISHED BY UNICEF TO INDIA
(1949 thru 1955)

Names of broad programs	1950	1951	1952	1953	1954	1955	Total
	Value in U.S. Dollars						
1. Stipends, Fellowships or training for Mother and Child Health subjects ...	75,000	193,000	...	324,000	247,009	5,000	844,900
2. Mother and Child health programs ...	350,700	...	534,800	912,200	481,000	212,400	2,491,100
G3. Malaria Control & supply of D.D.T. ...	143,700	226,000	289,000	...	...	...	658,700
4. B.C.G. Campaign ...	355,600	340,000	152,800	125,000	177,000	80,000	1,231,400
5. Tuberculosis Control	328,300	14,400	47,600	1,200	...	...	391,500
6. V.D. Control ...	87,000	20,000	...	...	...	...	107,000
7. Yaws Control ...	...	...	...	39,000	...	44,000	83,000
8. D.D.T. production ...	...	250,000	...	...	...	250,000	500,000
9. Diary plant ...	...	...	...	225,000	...	223,000	448,000
10. Skim milk Powder ...	68,400	...	...	64,000	...	...	132,400
11. Health Education ...	33,000	...	...	...	...	...	33,000
12. Poliomyelitis control	22,600	...	...	...	...	...	22,600
13. Establishment of MCH Dept. at the All-India Institute of Hygiene & Public Health, Calcutta	930,000	...	...	...	...	...	930,000
14. Pediatrics training ...	31,000	...	...	...	...	...	31,000
15. Penicillin production plant ...	850,000	...	...	...	...	...	850,000
16. Soap ...	...	26,600	...	...	...	...	26,600
17. Relief supplies for emergency situation	152,100	545,800	654,000	714,000	723,000	25,000	1,813,900
	3,427,400	1,615,800	1,679,200	2,404,400	1,628,900	839,400	11,595,100

1956 Allotment for Community Project development, drugs, training program and milk powder (upto March, 1956).	1,514,000
Freight and miscellaneous charges	1,847,000
Total	14,956,900
About 15 million dollars.	

their own problems. Such a government, with the help of UNICEF and of other UN agencies—the World Health Organization in the case of malaria, for instance, will draw up a detailed plan. The plan goes to UNICEF's 26-nation Executive Board, which approves it and votes funds to cover the DDT, sprayers, jeeps and other imported supplies and equipment which UNICEF can provide. In some cases WHO will recruit international experts—malariologists, entomologists, perhaps—to work on the program. And when the malaria campaign gets underway, UNICEF's field staff keeps in close touch with the government, and are kept advised of how it is progressing.

The role of WHO and other Specialized Agencies:

All programs aided by UNICEF have the technical approval of one of the Specialized Agencies—usually WHO or the Food and Agriculture Organization. The agencies give technical guidance, both to UNICEF and to the aided governments, and they supply expert personnel needed until people within the country can be trained to take over. UNICEF provides the supplies and equipment—the tools, in effect—which the technical people must have to make their skills useful. The division of responsibility is simple, and there is no duplication of effort.

How individuals can help UNICEF?

UNICEF gets most of its contributions from governments, but of course individual contributions are most welcome too. Much more important than individual financial support however is the moral support that UNICEF must get from people if it is to continue to grow. In many countries there are national UNICEF committees, made up of people who are interested in furthering this international aid to children. Their job is to get others interested, to spread information about the work, and to encourage strong government support of UNICEF.

Count of Countries and Programs aided—

Current data:

UNICEF is currently assisting 282 programs in 95 countries and territories, including 4 inter-regional programs. The greatest number of pro-

Social Welfare Organisation

(1) HIND KUST NIVARAN SANGH

Sri T. N. Jagadisan,
Organizing Secretary, New Delhi

A Note on the work of the Hind Kusht Nivaran Sangh and its predecessor the British Empire Leprosy Relief Association (Indian Council).

The Hind Kusht Nivaran Sangh was formed on the 27th April 1949. The Sangh took over the activities and the assets and liabilities of the British Empire Leprosy Relief Association (Indian Council), popularly known as B.E.L.R.A. When dealing with the work of the Hind Kusht Nivaran Sangh the work of the BELRA should be included.

The Indian Council of the British Empire Leprosy Relief Association was formed in 1925. The activities of the BELRA have included research, surveys, propaganda, post-graduate instruction in leprosy, publication of the quarterly journal, "Leprosy in India", and assistance in laying down policies for anti-leprosy work in the country.

In the appeal issued in 1925 for funds for this association by Lord Reading, the then Viceroy of India, research into the causation, treatment and control of leprosy was mentioned as the first object. This work has since been carried on at the School of Tropical Medicine, Calcutta.

India can claim to have established the first full-time leprosy research centre which has in some ways given a lead in leprosy research and this centre has been financed substantially by the Indian Council of the British Empire Leprosy Relief Association. Later, more intensive field investigations to study the epidemiology of leprosy were inaugurated.

This type of work was done in selected areas in different parts of the country, but more specially in the field investigation centre established for the purpose in a rural area in West Bengal. The information thus obtained has considerably added to our knowledge of the evolution of the disease and its epidemiological features. About one and half lakhs of rupees have been spent on this activity.

The importance of an educated public opinion towards ensuring success of any anti-leprosy campaign was recognised from the very beginning and propaganda was combined with the initial survey work of the Association. A touring leprosy propaganda officer was maintained for a number of years to stimulate interest in anti-leprosy work in the various parts of India.

LEPROSY IN INDIA is a quarterly journal published by the Association. It is a record of leprosy and anti-leprosy activities in India and other countries and publishes scientific articles of a high standard, as also those on topics of popular interest. The journal has been in great

---

grams assisted is in the field of diseases control (125), including malaria control (40), B.C.G. Anti-tuberculosis Vaccination Campaigns (25), yaws, beel and syphilis control (26). Almost one-third of the programs (86) are for maternal and child welfare services and training; 43 are for long-range feeding; and 23 are for milk and other food processing, Emergency aid are being provided currently to 5 countries.

B.C.G. Anti-tuberculosis Vaccination :

Over 154 million have been tested and 60 million vaccinated in 62 countries and territories.

Malaria Control :

12.2 million persons were protected in 1955 with UNICEF DDT in 23 countries and territories of whom over 6 million were children and nursing and pregnant mothers. In 1956, UNICEF DDT is expected to protect 21.9 million persons.

Yaws Control :

Approximately 57 million persons have been examined and nearly 10 million treated in 20 countries and territories. Of this total, 29 million examined and 5 million treated were children

ASST ISA NCE FURNISHED BY UNICEF TO INDIA
(1949 thru 1955)

Names of broad programs	Value in U.S. Dollars 1950	1951	1952	1953	1954	1955	Total
1. Stipends, Fellowships or training for Mother and Child Health subjects ...	75,000	193,000	...	324,000	247,009	5,000	844,900
2. Mother and Child health programs ...	350,700	...	534,800	912,200	481,000	212,400	2,491,100
G3. Malaria Control & supply of D.D.T. ...	143,700	226,000	289,000	...	...	...	658,700
4. B.C.G. Campaign ...	355,600	340,000	152,800	125,000	177,000	80,000	1,231,400
5. Tuberculosis Control	328,300	14,400	47,600	1,200	...	...	391,500
6. V.D. Control ...	87,000	20,000	...	...	...	...	107,000
7. Yaws Control ...	...	...	...	39,000	...	44,000	83,000
8. D.D.T. production ...	...	250,000	...	...	...	250,000	500,000
9. Diary plant ...	...	...	...	225,000	...	223,000	448,000
10. Skim milk Powder ...	68,400	...	...	64,000	...	...	132,400
11. Health Education ...	33,000	...	...	...	...	...	33,000
12. Poliomyelitis control	22,600	...	...	...	...	...	22,600
13. Establishment of MCH Dept. at the All-India Institute of Hygiene & Public Health, Calcutta	930,000	...	...	...	...	...	930,000
14. Pediatrics training ...	31,000	...	...	...	...	...	31,000
15. Penicillin production plant ...	850,000	...	...	...	...	...	850,000
16. Soap ...	...	26,600	...	...	...	...	26,600
17. Relief supplies for emergency situation	152,100	545,800	654,000	714,000	723,000	25,000	1,813,900
	3,427,400	1,615,800	1,679,200	2,404,400	1,628,900	839,400	11,595,100
1956 Allotment for Community Project development, drugs, training program and milk powder (upto March, 1956).							1,514,000
Freight and miscellaneous charges ...	...	...	...	...	...	...	1,847,000
Total ...	...	...	...	...	...	...	14,956,900

About 15 million dollars.

their own problems. Such a government, with the help of UNICEF and of other UN agencies—the World Health Organization in the case of malaria, for instance, will draw up a detailed plan. The plan goes to UNICEF's 26-nation Executive Board, which approves it and votes funds to cover the DDT, sprayers, jeeps and other imported supplies and equipment which UNICEF can provide. In some cases WHO will recruit international experts—malariologists, entomologists, perhaps—to work on the program. And when the malaria campaign gets underway, UNICEF's field staff keeps in close touch with the government, and are kept advised of how it is progressing.

The role of WHO and other Specialized Agencies:

All programs aided by UNICEF have the technical approval of one of the Specialized Agencies—usually WHO or the Food and Agriculture Organization. The agencies give technical guidance, both to UNICEF and to the aided governments, and they supply expert personnel needed until people within the country can be trained to take over. UNICEF provides the supplies and equipment—the tools, in effect—which the technical people must have to make their skills useful. The division of responsibility is simple, and there is no duplication of effort.

How individuals can help UNICEF ?

UNICEF gets most of its contributions from governments, but of course individual contributions are most welcome too. Much more important than individual financial support however is the moral support that UNICEF must get from people if it is to continue to grow. In many countries there are national UNICEF committees, made up of people who are interested in furthering this international aid to children. Their job is to get others interested, to spread information about the work, and to encourage strong government support of UNICEF.

Count of Countries and Programs aided—

Current data :

UNICEF is currently assisting 282 programs in 95 countries and territories, including 4 inter-regional programs. The greatest number of pro-

grants made has come to a total of 2,793, total institutions aided to 2,186, and the total amount allocated to Rs. 75.11 lakhs. At its last meeting the Board sanctioned a further amount of Rs. 72 lakhs to about 1,200 institutions as the first instalment of grant for the Second Five-Year Plan.

Rural Welfare Projects

To provide essential basic social services for the benefit of rural areas a scheme of Welfare Extension Projects has been evolved by the Board. In these projects welfare services are provided to women, the children and the physically handicapped.

A Welfare Extension Project ordinarily comprises of 20 to 25 villages in a compact area with a population of 20,000 to 25,000. Each project is divided into about five centres of five villages each. Voluntary workers representing local welfare organizations, who are nominated as members of the Project Implementing Committees, plan the project work. A Project Implementing Committee consists ordinarily of 9 members, the majority of whom are women social workers and at least one is a district official concerned with planning. The village level worker or gram-sevika is a wholetime paid employee who carries on the day to day activities in the project centres with the help of a *dai* and a craft instructor. These activities include teaching of a craft, social education, literacy classes and maternity aid for women; distribution of milk, balwadies and organization of play-centres for children. Each project is estimated to cost Rs. 25,000. Programmes in the Welfare Extension Projects are so designed that they will not duplicate the services in the Community Projects or N.E.S. schemes.

The total number of projects so far inaugurated is 316. It is expected to increase the number of the projects to about 1,340 in the Second Plan period.

Training of Personnel

To provide trained personnel for these projects, the Board has organized a training programme for gram-sevikas, which has been undertaken by the Kasturba Trust while training of midwives and *dais* is done in cooperation with Ministry of Health. Twenty training centres have so far turned out 570 gram-sevikas while about 230 midwives are under training in 25 medical training institutions.

To implement the Board's programme in the Second Five-Year Plan 1,500 midwives, 8,000 gram-sevikas and 6,000 *dais* would be trained.

Urban Projects

To help lower middle class women to supplement their family incomes by doing paid work in their homes, the Board has sponsored a scheme of industrial cooperatives. Match factories have been started at Najafgarh, a suburb of Delhi, and at Hyderabad, Vijayawada and Poona. To-day a few hundreds of confident and self-reliant women coming from lower-middle class families are producing 'Samaj Kalyan' matches in these cooperative industrial units, to supplement their family incomes.

The Central Social Welfare Board, in collaboration with the Ministry of Commerce and Industry, is contemplating extension of Urban Family Welfare Scheme during the Second Plan period, during which years each State in India is expected to have at least one project of this kind and some of them more than one.

New Services

To go into the problems of victims of commercialised vice or prostitution and after-care of delinquent and dischargees from correctional institutions, the Board appointed two Advisory Committees on After-Care Services and Moral and Social Hygiene problems. The reports of the Committees are revealing documents disclosing the wide gaps in the field of welfare work in India in respect of the victims of these vices.

A Central Advisory Committee has, after examining the reports of the two Committees jointly, formulated a co-ordinated and integrated programme, under which programmes of the After-care and rehabilitation of not only discharges from correctional institutions but also women rescued from brothels will be undertaken. Homes to be started under this programme would have facilities for training men, women and children in suitable crafts and vocations, designed not merely to supplement a person's income but also to provide an adequate living wage. The preliminaries for putting the schemes into operation are being actively worked out.

Financial Provision

For the Second Plan period, a provision of Rs. 14 crores has been made by the Planning Commission for the programmes aided or sponsored by the Central Social Welfare Board. Additionally, a provision of Rs. 10.5 crores has been made in the Second Plan schemes of the Ministries of Home, Labour, Health, and Industry and Commerce and in the plans of the State

Governments for execution of the programmes of After-Care and Moral and Social Hygiene programmes.

Conclusion

It is now four years since the Central Social Welfare Board was set up as an autonomous organization, under the general administrative control of the Ministry of Education. During this period it has been functioning as a machinery through which public assistance to social welfare activities on a planned basis could be channelled, and as an agency for promoting social welfare services, both in the urban and rural areas for specific groups of persons like women, children and the handicapped.

INDIAN RED CROSS SOCIETY

By SARDAR BALWANT SINGH PURI,

Secretary-General, Indian Red Cross Society

When the World War I broke out in 1914 was without a Red Cross Organisation. It was first brought into existence as the Indian Branch of the Joint War Committee (British Red Cross Society and St. John Ambulance Association). At the close of this war the Indian Red Cross Society Act (Act XV of 1920) was made provision for he surplus war funds by he Managing Body of he new Society.

Constitution:—The Managing Body consists of a chairman and 25 members, of whom 12 are the Vice-Presidents, 8 selected by the Society at the Annual General Meeting from among the members of the Society and 5 nominate by the President is Society is fortunate now in having Dr. Rajendra Prosad (President of the Republic of India) as its President, Rajkumar Amrit Kaur, Union Health Minister as the Chairman of the Managing Body, Shri P. C. Padhi as the Honorary Treasurer and Sardar Balwant Singh Puri as its Secretary-General.

Junior Red Cross:—Junior Red Cross which was started in 1926 is an integral part of the Indian Red Cross Society and is its youth section. The movement functions in more than 23,000 schools and colleges with a membership exceeding over 14,41,000.

Medical After-Care Fund:—With a view to granting relief for medical treatment and cognate purposes to the sick Indian ex-service personnel, who participated in the Second World War, the Indian Forces Medical After-Care Fund was instituted at the headquarters towards the end of 1941. The scope of the Fund was extended in 1949 so as to include the ex-servicemen of World War I. Assistance from the Fund is invoked by an increasing number of deserving cases. The total number of applications dealt with till the end of 1955 was 5,035. During 1955, 204 fresh applications were received from ex-servicemen suffering from tuberculosis, leprosy, mental and other diseases, and a sum of Rs. 45,289 was given in grants to 162 new and 445 old cases raising the total of disbursements from the fund during the last 14 years to Rs. 13,46,880. Out of a sum of Rs. 10,000 received from the Armed Forces Reconstruction Fund in 1952 for providing medical after-care to the ex-service personnel of the Jammu & Kashmir operations Rs. 7,658 has so far been spent on 45 cases till the end of 1955.

Bureau of Maternity & Child Welfare:—The Maternity and Child Welfare Bureau of the Society was established in 1931.

The Bureau administers the Lady Chelmsford League Fund for maternity and child welfare, the Victoria Memorial Scholarships Fund for the training of dais, and the Army Child Welfare Funds. The Bureau also acts as a Central office for information and offers technical assistance.

A grant from the Government of India has made it possible to initiate work in the backward areas of Tehri-Garhwal where three welfare centres have been opened for providing maternal and child welfare services.

Relief Activities:—Emergency relief forms an important aspect of Red Cross work in India and it comprises two categories: assistance with cash grants, medical and other supplies and provisions of trined field workers for first aid, ambulance service, nursing and incidental duties for sudden emergencies.

Health Education:—Popular health education is another important activity. The Society publishes posters, pamphlets and other materials on health subjects. Health lectures, film shows, demonstrations of slides, etc. are also regularly organised under Red Cross auspices. Two quarterly Journals are published, namely, the Indian Red Cross Journal and the Indian Junior.

Hospitals:—The Society runs a Red Cross Home in Bangalore well-equipped for 75 patients for giving expert medical aid and nursing care to permanently disabled ex-service-men. It also provides various amenities and comforts to patients in all military hospitals in India and to Field Medical Units of Jammu and Kashmir Forces.

Finances:—The investments of the Society at the end of 1954 stood at Rs. 2,11,15,800 and the floating and fixed deposits at Rs. 2,81,658. From the total income of Rs. 6,96,153 derived from investments of the Society, a sum of Rs. 1,98,000 is distributed under the Act to the State Branches in India and those in Pakistan in proportion to their contributions to the Central "OUR DAY" *Fund raised* in the First World War.

---

(4) INDIAN CONFERENCE OF SOCIAL WORK

MRS. S. DASTUR PATEL, Bombay

Purpose

(1) To undertake, promote and develop the study of social problems; (2) To review and guide the progress of social work in the country on scientific lines; (3) To serve as an information exchange in respect of social work and social service organizations; (4) To disseminate knowledge and information and to educate public opinion about scientific social work; (5) To arrange the holding of periodical conferences on specific social problems; (6) To appoint or depute representatives on national and international conferences; (7) To procure the enactment or change of laws relating to social matters; (8) To encourage the formation of social service agencies wherever they may be needed and to bring about closer co-operation, co-ordination and collaboration between social service agencies in India and abroad; (9) To promote and safeguard the status of social workers; (10) To promote the professional training of social workers and encourage their employment for welfare work.

Programme of Work

Eight Annual Conferences in Bombay, Madras, Delhi, Jamshedpur, Calcutta, Hyderabad, Lucknow and Bangalore. Organised Seminar of experts on Physically Handicapped Children in South-east Asia and another on "Casteism and Removal of Untouchability in India" in September-October, 1955. Publishes a periodical bulletin and relevant literature. Collects and collates information about social work in India. Its 14 State Branches undertake active field work, especially in new fields, in addition to holding State Conferences. Directories of Welfare Agencies have been prepared for Bombay, Calcutta, Madras, Delhi, Mysore, Hyderabad and Lucknow. Undertaken a Pilot Research Project of Beggars in the City of Bombay, financed by the Ministry of Education.*

Affiliated to: International Conference of Social Work, New York.

Source of income: Membership fees, donations and government grants.

Publications: Annual Reports ICSW Bulletin, Proceedings of the Annual Sessions, Report of the Seminar on Casteism and Removal of Untouchability, Sub-Committee Reports on Tribal Welfare, Minimum Standards for Child Care Institutions in India, Family Planning and Social Welfare, Social Work in India and other literature.

The present office-bearers of the Conference are:—

President—Smt. Hansa Mehta.

Hony. General Secretary—Smt. Gulestan R. B. Billimoria.

Executive Secretary—Shri B. Chatterjee.

Asstt. Secretary—Smt. Shirin Dastur Patel.

The Indian Conference of Social Work is primarily dedicated to the stimulation of public interest in social work and social needs. Though by the terms of its Constitution it cannot undertake any direct work itself, it guides its branches and sponsors model projects. It tries to secure

Community support for the existing welfare efforts in the country. Its aim is to serve as a forum for the exchange of information and experience on various social questions and to provide a basis for a clearing house of information on all matters concerning social work.

During the eight years of its existence the Indian Conference of Social Work, in spite of its limited resources and means, has made a definite contribution towards arousing public consciousness of social welfare needs and providing an adequate channel of expression for social workers of all shades of opinion from different parts of the country.

The Conference has so far held eight annual all-India sessions in Bombay, Madras, Delhi, Jamshedpur, Calcutta, Hyderabad, Lucknow and Bangalore, respectively. All-India Exhibitions and symposia on various aspects of Social Welfare have been organised by the Indian Conference of Social Work from time to time.

The Conference has achieved notable success in securing international recognition of the social welfare needs and aspirations of the South East Asian countries. At the invitation of the Indian Conference of Social Work, the International Conference of Social Work held its session in 1952 in India for the first time in an Asian country. Further, the Madras Session of the International Conference of Social Work met with an enthusiastic response and was attended by over 1,300 delegates from 30 countries; among the delegates were eminent social thinkers, social scientists and administrators.

A permanent South East Asia Regional Office of the International Conference of Social Work has been se up in Bombay in collaboration with the Indian Conference of Social Work.

In co-operation with the United Nations and the Ministry of Education, Govt. of India, the Indian Conference of Social Work organised, in 1950, a Conference of Experts on Physically Handicapped Children. This Conference was attended by the representatives of many Asian countries and International agencies like the International Labour Office, World Health Organisation, United Nations Children's Emergency Fund, United Nations Educational, Social and Cultural Organisation, etc.

Detailed survey reports have been submitted on "Homeless Children in India", "Traffic in Women and Children" and "Training of Auxilliary Welfare Personnel in India" to the United Nations.

A detailed report on the number, distribution, languages, social customs, etc. of Forest Dwelling populations in India was submitted to the Ministry of Labour in June 1952.

The Indian Conference of Social Work has brought out a number of publications, which help to meet the greatly felt need for adequate literature on Social Work. Among the important publications of the Indian Conference of Social Work are: —

1. Social Work in India and a Directory of National Social Welfare Agencies.
2. Six-monthly Bulletin of the Indian Conference of Social Work.
3. Social Work as a Career (material prepared by the Indian Conference of Social Work for the Vocational Guidance Bureau of the Govt. of Bombay).
4. A Memorandum of Tribal Welfare.
5. Directory of Social Welfare Agencies in Gr. Bombay and Gr. Calcutta, Uttar Pradesh, Mysore and Madras prepared by the branches. The compilation of similar directories is underway in Delhi, Hyderabad, Assam and the other branches of the Conference.
6. "Family Planning & Social Welfare".
7. "Minimum Standards for Child Care Institutions in India".
8. Report of the Similar on Casteism and Removal of Untouchability.
9. Proceedings of the Bangalore Session of the ICSW.

The Indian Conference of Social Work sponsored he firs successful cosmopolitan "Family Welfare Agency" in India, functioning on a Case Work basis in the labour areas of Bombay.

The Indian Conference of Social Work was instrumental in inviting in 1953—thanks to the approval of the Govt. of India—a team of experts on Social Welfare who toured the country and made their services available to various government departments and voluntary social service organisations. The expenses of this team were met by the TCA and the Ford Foundation.

An advanced Seminar on Social Work Training was conducted by some of the experts in February of 1953. The Seminar was organised jointly by the University of Baroda and the Indian Conference of Social Work. The Seminar proved its utility not only to the Faculty of Social Work in Boards but to all the social work training institutes in India who had sent their representatives.

The Indian Conference of Social Work also organized the First All-India Conference of Labour and Welfare Officers under the presidentship of Shri Shantilal H. Shah, Minister of Labour, Govt. of Bombay in April 1953 which has resulted in the formation of an All-India Council of Labour and Welfare Officers.

A highly successful Seminar on Casteism and Removal of Untouchability was organized at Delhi in October 1955, when experts, social scientists, Government welfare administrators and social workers discussed the various aspects of the problem and a useful report on the subject has been published.

Future Programme

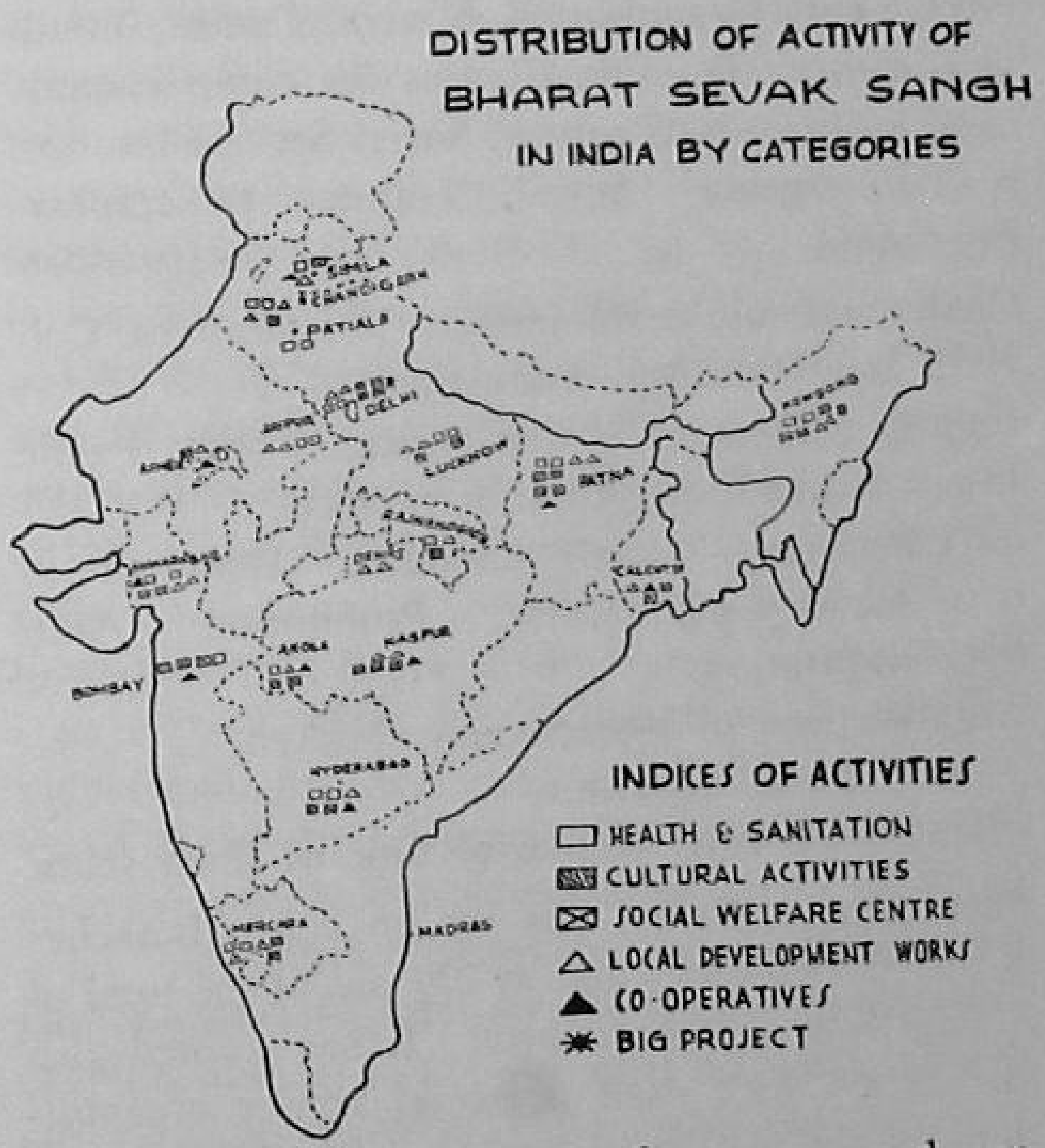
The plan of activities for the year 1956-57 includes the following:—

1. Ninth Annual Session of the Conference in December 1956 on "Social Welfare in the 2nd Five-Year Plan".
2. A National Seminar on Slum Clearance in December 1956 in Bombay.
3. A Pilot project on Beggar Problem in the City of Bombay.
4. Publication of popular pamphlets on various aspects of Social Work.

HEALTH ACTIVITIES OF BHARAT SEVAK SAMAJ

SRI A. N. DUGGAL, Adviser Sanitation, New Delhi

1. Bharat Sevak Samaj as started in August 1952 to develop avenues of voluntary service and to draw out the available unused time, energy and other resources of the people for the great task of national construction and social welfare to supplement Government efforts to build a new India by successive implementation of the national programmes of series of their Five Year Plans.



The Organisational set-up of the Bharat Sevak Samaj at various levels is as follows:—

(a) Centre.
(b) Pradesh.
(c) District.
(d) Village.

(a) *Centre:*

This consists of:—

(i) The General Council.
(ii) The Central Board.
(iii) The Advisory Committee.
(iv) The Administrative Committee.

(b) *Pradesh:*

There is a Convener for each Pradesh. His term of office is one year. He is assisted by the Pradesh (State) Council, which consist of the Conveners of Districts and Towns in the Pradesh and persons representing the various functional activities of the Samaj and Institutional members. In addition, one whole-time paid employee exists as Pradesh Organiser.

(c) *District:*

The Chief worker in the district is the Convener. Conveners for districts and towns are appointed by the Pradesh Conveners and are assisted by Town Committee and District Committee consisting of unit leaders of Talukas, Tehsils or Thanas and local persons officials as well as non-officials closely connected with the welfare and development activities forming part of the current programme of the Samaj in the locality. Reciprocally, Samaj workers are co-opted as members of the C.P.A., N.E.S. and Government Development Committees etc. at various Administrative levels. Such arrangement of representation prevents overlapping of functions and work. Co-ordination and collabora-

tion are ensured by agreed allotment of work in different programmes by mutual consultation and discussion as and when necessary.

In each Pradesh one district is selected for intensive work and a paid Organiser is appointed in it.

The chief worker in the tehsil or taluks is called the Unit Leader.

(d) *Village:*

For each village, there is a village leader appointed by the Unit Leader of the village or Thana Committees set up for the purpose of furthering the activities of the Samaj. A model village or centre in every Thana or sub-division is created for the people of other villages to follow as a pattern.

2. The various activities of the Samaj are as under:—

(a) Sanitation and Health.
(b) Social enlightenment including publicity for the Five Year Plan.
(c) Youth Organisation, Student Camps, Youth camps, Training Centres for camp leaders, Follow-up of camps, Social Service Groups, Emergency "Seva", Training of employment.
(d) Economic development, Co-operatives, Cottage & Village Industries.
(e) Development works, Local works, Public Co-operation in major projects.
(f) Bettering Social standards, Removal of Social inequalities, Prohibition, Anti-adultration.
(g) Welfare of women and children.
(h) Cultural activities.

4. In the brief course of time of three years, Bharat Sevak Samaj has set up active branches in the 32 Pradeshes and in 279 out of the total of 328 districts in the country. It has secured also association with itself of social service organisations of the All-India level and 99 similar organisations at the Pradesh level.

4. *Finances:*

Funds are derived from donations, collection drives, subscription from members and Government contributions for specific purposes. The breakdown of total expenditure at the Centre and Pradeshes of the Government contributions during the year 1955-56 is as follows:

Contribution received by Central Office ...	Rs. 2,01,983- 8 -0
Contribution received by Pradesh Branches	Rs. 2,84,135- 0-10
Grants received from State Governments ...	Rs. 97,504- 0- 0

The recommendations of the All India Sanitary Committee comprise of practical and basic sanitation programme of:

1. Health education and propaganda by all recognised effective methods in all segments of the society and by priodic sanitation campaign throughout the country.

2. Training of the Samaj Welfare Organiser in hygiene and sanitation by practical work and lectures in specialy arranged classes and during the training of youths and students its social service camps.

3. Taking up of sanitation work on permanent basis in convenient groups of villages or in slum areas by voluntary sanitary squads under a trained organiser who should instruct and organise them under a local leadership for assisting the local sanitation authorities or health centres in both the community project and extension and non-extension service areas in carrying out their sanitation programme by means of individual and community effort in a co-operative way by free voluntary contribution of the inhabitants in the shape of labour material etc.

4. Establishment of a model sanitary village in each Pradesh under the supervision of its Sanitary Adviser Sub-Committee.

5. The items of sanitation selected for execution in particular are:—

(i) Improvement of water supply.
(ii) Disposal of night soil (construction of private latrines, urinals etc.).
(iii) Disposal of rubbish etc. by sanitary methods (composting) and disposal of waste and rain water.
(iv) Making of drains, soakage pits and encouraging development of kitchen gardens.
(v) Insect control.
(vi) Personal, home hygiene and that of institutions and the Samaj undertakes rural drinking water supply scheme works, improvement of rural sanitation, and improvement of dispensary building through its Local Works Section.

HEALTH LEGISLATION IN INDIA

DR. K. S. VISWANATHAN, Calcutta

I. *Introduction.*

With the various developments gaining their momentum in the country, the greatest need of the hour is to define through enactment of the necessary comprehensive legislation, the duties and responsibilities of the central, state and local government authorities and of the people for whose benefit the comprehensive health promotional services are instituted. Public Health Laws are as essential as security laws, in a welfare state. Health Legislation provides the working tool with which the health administrator is enabled to safe-guard the communities from health hazards and to implement schemes for advancement of health.

II. *The present position of Health Legislation in in the country.*

At present the various Laws relating to health lie scattered in many separate enactments passed piecemeal by the States over a series of years as and when the need arose. Many of these enactments have become absolete and outmoded in view of the rapid advances in scientific knowledge which demand complete revision of many health practices and procedures hitherto in vogue. Many new procedures have to be instituted to make the health services conform to modern scientific requirements and all these should have the backing of Law. Further, standards for performance and achievement have yet to be laid down for the provision and maintenance of various health activities. The only way in which all the existing defects can be remedied is for each State to have its own comprehensive public health act enacted through its legislatures, so that all legal provisions relating to health will be brought up-to-date and codified into a single act. A few States in India have enacted Public Health Act, bringing together the existing legislation. However, even these Acts mainly cover the fields of sanitation and communicable disease control only, and make no provision for medical and nursing care through hospitals & clinics, laboratory services and field programmes for preventive medical care and for positive health promotional services like nutrition, maternal and child health, school health, physical education and health education.

In a welfare state which we are aiming at, the people have a right to expect these health services to be provided adequately. Therefore, it becomes necessary to fix by suitable legislation the authorities on whom the responsibility for organising, financing and maintaining these services is laid.

III. *The genesis of the Model Public Health Act.*

The Central Health Council, convinced of the urgent need for enacting comprehensive health legislation in the country, recommended to the Union Government towards the end of 1953 to appoint a committee for drafting a Model Public Health Act which the States in India might enact, health being a subject falling under the State List as per the Constitution of India. The Committee commenced work by the middle of 1954 and completed the Draft Model Public Health Act and submitted its report to the Government of India in 1955. The report was considered at the further meeting of the Central Health Council in February 1956 and the Draft Act has been commended to the various States for enactment with necessary modifications to suit local conditions. It now rests with the States to enact a progressive legislation which will be a land mark in the progress of Public Health in this country.

The undermentioned extract from the agenda and explanatory memoranda for the fourth meeting of the Central Council of Health gives a gist of the salient features of the Model Public Health Act:

IV. *Salient Features of the Model Public Health Act drafted by the Special Committee (1955)*

Part I of the Act—Organisational and administrative provisions.

1. The draft comprehensive Model Public Health Act submitted by the Committee has 57 chapters and runs over 250 printed pages. While the existing enactments lay emphasis, by and large, on the provision of sanitary services, the draft Model Act has taken full note of the modern trends in Public Health and has brought within the purview of the Act several matters untouched before the Health Legislation in India. Public Health today aims at the building up of a social machinery to provide for the people, a reasonable standard of Health Care in the curative, preventive, promotive and rehabilitative fields. In consonance with these trends, the draft Act has made a departure from the older Acts and has included these fields within its purview. In fact, this Draft Act aims at being the legislative

counterpart to implement fully the recommenda-
mental Hygiene Committee reports and has
tions made in the Bhore Committee and Environ-
envisaged a comprehensive and intergrated Health Service covering all the essential fields. The Act, therefore, lays down statutory obligations on the Government, local authorities and the people to ensure the fulfilment of this objective.

2. Medical relief measures including the provision of hospitals, clinics, laboratories, specialists, nursing and ancillary services are proposed to be given a legal status and the standards of such provisions are laid down in the draft Act. The integration of these services with preventive care has been ensured by the legal provisions for a State Government organisational set up running from the State level down to the health centre level the periphery, so that in the actual working, Health Care will become a co-ordinated effort. The responsibility for this organisational set up for Health Administration has been largely laid on the State Govt. which is the ultimate authority responsible for financing and implementing a prpogressive health policy in a welfare State.

3. The Local authorities are still largely responsible for sanitation and other environmental health services. The Model Act, however, provides that the State Govt. should have the obligation to assist Local Authorities with finance and technical advice through their specialists, so that any health programme considered as essential does not suffer for lack of funds or personnel, both of which are usually wanting in Local Authorities. With this end in view, powers are vested in the Government to supervise, supplement or take over certain essential institutions or programmes or works which Local Authorities find themselves unable to run or execute.

4. "State Health Services" are defined and listed in Schedule I, and include all basic services necessary for the promotion of positive health.

The composition of the Directorate of Health Services, its divisions and bureaus are given in Schedule II and the District and peripheral services in Schedule III.

A noteworthy feature is the statutory provision of a Division of Public Health Engineering as part and parcel of the Directorate of Health Services, with a Chief Engineer (P.H.) and District and Sub-divisional Public Health Engineering staff at the perphery. This provision is intended to step up, quickly, under proper technical guidance and control the expansion of Environmental Health Services, so badly needed in urban and rural areas.

5. Besides the State Health Administration staff, the District and Municipal Health Officers and Health Engineers are expected to form cadres of Officers of State Government with prescribed qualifications lent to these Local Authorities. Such a provision, it is considered, will ensure administrative efficiency and rapid progress of health work.

6. The Director of Health Services is vested with powers to deal immediately with emergencies endangering life or health and then report to Government. This provision is made to facilitate prompt action. He has also powers to supervise and control the Health Programme or Institutions of Local Authorities and to control the work of Local Authority Medical Officers of Health including powers for transfer and disciplinary action.

7. *Finance:* A provision has been included for the earmarking of a minimum proportion of the income of Local Authorities for public health purposes—1/3 for Municipal areas and 1/5 non-municipal areas.

8. Part II of the Act—Medical relief & Public Health measures.

Besides the legal provisions for the effective control of communicable diseases and the vesting of Health Officers with full powers therefore, this part deals with the provision of and standards for hospitals including free beds, and the rules for the management of medical institutions.

Provisions have been made for compulsory vaccination, re-vaccination and mass inoculation as an anticipatory measure and for framing of Epidemic Regulations by the State Government. The Director of Health Services has been empowered to assist Local Authorities with staff and equipment in emergencies or to take over the situation under his own control. Provisions have also been made for controlling certain non-comunicable but widespread nutritional and other diseases like beriberi, epidemic dropsy, scurvy, etc. By the above provisions, several lacunae in the existing legislation are to be covered for the adequate control of wide spread outbreaks of disease.

On the positive health side, school health and maternity and child welfare services and nutrition programmes have been provided for, partly by State Government and partly by Local Authorities.

A new feature in the draft Act is the provision for domiciliary nursing and midwifery services and for family planning services as an integral part of Maternity and Child Welfare services, thus implementing the new policy of Government. Another new feature is the provision for institutions for the care of indigent or handicapped children. Medical Social work is also provided for in connection with certain clinics and institutions with the aim of promoting after care and rehabilitation for convalescents and the aged.

Control over nursing homes and sanatoria by licensing and the maintenance of their standards are also provided for. Other new features in the Act are the provisions for Ophthalmic, Mental Health, Ambulance and Laboratory services. These provisions meet some of the hitherto untouched problems and make the Health Care comprehensive and realistic.

Part III of the Act—Sanitation.

9. This Part deals with the provision of Environmental Sanitary Services, but is much more comprehensive and informative than the older enactments. It lays down the procedure for instituting and financing water supply, drainage, housing, town and the Local Authorities are primarily responsible for instituting these schemes, State Government can also assist the implementation, or take over some of the schemes. The provisions for Health resorts and Holiday Camps are new features.

Provisions supplementary to existing Central Acts are given for food control and health of factory workers.

Part IV of the Act.

10. This contains general provisions especially relating to financial matters. Power is given to Government or Local Authorities to borrow money for health projects with a view to a speedy implementation of these projects. Loans from State and Central Governments are also provided for, for such projects.

Specification of Standards.

An outline of standards and other particulars for incorporation in the rules and bye-laws to be framed by State Government or Local Authorities under the Model Public Health Act is given as an annexure to the Model Act. These incorporate the latest technical information available in respect of standards for Healthful Housing, Water Supply, Sanitary works, certain licensible trades, schools, etc. This should be of great assistance to States in the actual implementation of the Public Health Act.

The Model Public Health Act thus aims at providing an effective tool for the welfare State to translate its benevolent ideas and policies of social welfare into effective administrative action for the benefit of the people. It takes into accoun
for the benefit of the people. It takes into account
the recent advances in medical knowledge and the recent trends in health organisation and administration, and the peculiar conditions and needs of the country.

Health Services in the States

(1) HEALTH SERVICES IN THE BOMBAY STATE

Director

Health Services :

The Department of Public Health is mainly concerned with preventive Health work. It is headed by the Director and under him there are three Assistant Directors of Public Health for the Northern, Central and Southern Divisions and six functional Assistant Directors—one each for Malaria, Vaccine production, Public Health Laboratory, B.C.G. and T.B. Control, Vital Statistics and Epidemiology and M.C.H. There are in addition District Health Officers functioning in each District of the State with separate epidemic and sanitary staff under them. In normal times this staff attends to sanitary measures in villages but when an epidemic breaks out, additional staff is appointed for the purpose. There are also Medical Officers in charge of Malaria Control work in most of the Districts with adequate spraying and supervisory staff.

In addition, there are mobile hygiene units with trucks and necessary staff and equipment. On the first notice of an epidemic, they immediately proceed to the place where it breaks out to carry out mass inoculation or vaccination, disinfection and domiciliary treatment. If the epidemic is more wide spread, a fully equipped hospital of 50 or less beds, with tents in which it can work and an ambulance to carry patients from outlying villages, is set up in the affected areas. There are special organisations for the prevention and control of Plague, Malaria and Tuberculosis.

Vital Statistics :

A scheme of centralisation and nechanisation of Vital and Health Statistics in the state by the establishment of a Bureau of Vital Statistics and epidemiology at the Headquarters of the Directorate was implemented during the year 1955. The Mid-year estimated population in 1955 was 38,908,067 against 38.329.070 in 1954. The area of the State is 111,131 square miles and the population per square mile 350.

Current Vital Statistics of Bombay State—1955.

CURRENT VITAL STATISTICS OF BOMBAY STATE,—1955

	Rate per Thousand
Births	37.2 (32.8 in 1954)
Deaths: ...	
Cholera	0.01 (0 . 01 also in 1054)
Smallpox	0.06 (0 .01 in 1954)
Plague	---
Fevers, other than Malaria	4.75
Respiratory Diseases ...	2.46
Diarrhoea & Dysentery	0.62
Malaria	0.47
Injury	0.27
Other causes... ...	6.10
Total death	14.75 (as against 15 .0 in 1954)
Maternal Mortality ...	4.8 (4.3 in 1954)
Infant Mortality ...	100.00 (108 in 1954)

Malaria Control :

One of the outstanding health programme in Bombay State is the introduction of the Statewide Malaria Control Scheme under the National Malaria Control Programme since June 1953. DDT spraying operation twice a year has been carried out among 20 million people living in about 4 million houses in 27,000 malarious villages in the State. In some Malnad tracts of Kanara District even four rounds of DDT have been applied. A more recent endeavour as a

*Crude death rate	15.6	19.4
Birth rate	34.4	43.2

There are three Mobile Hospital Units under this Department for the isolation and treatment of cases of infectious diseases like cholera and plague. In 1953, out of 37,723 reported cases 7,309 cases were isolated and treated in this mobile hospital units.

Control of Smallpox :

Smallpox is considerably under control in recent years. From 1921-50, the mortality in quinquennial period varied from 0.2 to 0.5 per mille per year. In 1951-54, however, it was only 0.1. Steps were taken since 1954 to reorganise the programme of vaccination which consisted of 9 months period for primary vaccination and the remaining 3 months period for revaccination. By this procedure almost ¼th of the entire population of the State has been protected against smallpox in a period of two years. The continuance of the programme for the next 4 or 5 years should, it is hoped, make it possible to control smallpox to a much larger extent.

⊕ *Improvement of Vital Statistics :*

part of this scheme consists of the utilisation of the student volunteers in spraying operations as an extra-curricular Social Activity.

During the 2nd Five Year period, steps have been taken from the year 1956-57 to give effect to the change in the objective of the spraying operations from malaria control to complete eradication of malaria.

Eradication of Plague :

The Second spectacular achievement in the State in recent years is the virtual elimination of plague in men from 1950 onward which has been due to the adoption of newer methods of plague eradication and to some extent also due to DDT operations undertaken primarily for malaria control through the reduction of rat flea which transmits the disease from rat to man.

Lowest Incidence of Cholera :

The disease prevailed in a very mild form during the last two years claiming 289 deaths in 1955 and 376 in 1954 as against 15,302 in 1953 and the quinquennial average being 4,781. The death rate for both the years 1955 and 1954 was 0.01 and quinquennial mean 0.12. This may be due to the record programme of immunisation against cholera in 1953.

⊕ In a house to house checking campaign of vital statistics by the vaccinators during April to June 1955 yielded the following interesting results: *

To effect improvement in the compilation and appraisal of vital and health statistics in the State, Government has sanctioned centralisation and mechanization of Vital and Health Statistics at the Directorate of Public Health under a full time Assistant Director of Public Health. This will greatly help in the efficacy of compilation and also for the better evaluation of statistical data.

Pulmonary Tuberculosis :

Facilities for free examination of sputum for tubercular infection were afforded at all the Cival Hospitals and Tuberculosis clinics were opened by Government in 7 Civil Hospitals and one new T.B. hospital was opened at Aundh (Poona). By the end of 1955, 56,32,407 persons were tested of whom 32,90,158 were found positive, 14,68,484 negatives, 8,73,765 were absent and 1,44,653 were vaccinated.

C.D.P. and N.E.S.:

With a view to bring about a social change in order to put an end to poverty and stagnation and to initiate a process of growth in which every family will be enabled to take its share, bring about a new life and to create new pattern of society the scheme for N.E.S. and Community Projects has been taken in hand. Every area in the state is to come under N.E.S. blocks. Those which have shown good results in the way of people's response to programmes are selected for intensive development as Community Project Blocks for a period of three years ordinarily. The Public Health Department utilised this developmental activity and with the cooperation of the project staff, the social workers and the village level workers took steps in these areas in order that health services may yield better dividends. The Public Health Department provided a special lecturer in Public Health in each of the extension training centres at Manjri (Poona District) Anand and Dharwar, where various categories of project staff are given training. The department staff as well as project staff coordinated with social workers having experience in rural sanitation and fostering scheme of Gram Safai.

Primary Health Units :

As new proposals of this Department for health services in the Second Five Year Plan, Primary

Health Units would be established in certain districts of the State on the lines of those recommended in Bhore Committee Report.

But if a Community Development block is established in any of the districts in which the scheme for establishment of Primary Health Units under the Second Five Year Plan is approved by Govt. the pattern of staff in the latter is followed and instead of opening one Primary Health centre and 2 sub-centres for a population of 67,000 three Primary Health Units each serving roughly 20,000 population are recommended.

Upto now 13 Primary Health Units have been established in C.D.P. areas.

Maternal and Child Health Units:

Upto the end of 1954, maternal and Child Health work in Bombay State was mostly carried out by voluntary associations such as the Bombay Mothers and Children Welfare Society with assistance from Government except for the fact that Government had opened 24 Combined Medical and Public Health Units each serving a population of 8,000 to 10,000 spread over 8 to 10 villages within a radius of 3 to 5 miles. These units were miniature Primary Health Units recommended by the Health Survey and Development Committee of the Government of India.

During the year 1955, the Government of Bombay undertook in collaboration with the Government of India, the UNICEF and the World Health Organisation, a Maternal and Child Health Project. Under this project 103 new Maternity and Child Health centres each having a Nurse Midwife or Health Visitor and a Midwife were opened in the State. 78 of them were integrated with the Primary Health Units in Baroda and Poona Districts, which is a multipurpose instrument of service each catering to about 20,000 population in 20 to 25 villages within a radious of 8 to 10 miles. Both preventive and curative including maternal and child health services are integrated in these units. The remaining 25 were opened at the rate of one in each of the remaining 25 Districts.

A Maternity and Child Welfare Centre differs from Primary Health Unit in that the Medical Officer is not held fully responsible for the work of the MCH staff, although he supervises it. He is not placed under the administrative control of District Health Officer and is not in receipt of P.T.A. No sanitarian is attached to the Maternity and Child Health Centre and no maternity home is provided. Ultimately, however, it is the intention to develop these into Primary Health Units. 25 more Maternity and Child Health Centres are proposed to be opened in the remaining 25 Districts during 1956-57.

Combined Medical and Public Health Units:

Two Combined Medical and Public Health Units were sanctioned during 1955. All the Combined Medical and Public Health Units have now been converted into Primary Health Units during 1956-57. The State will have at the end of 1956-57, 161 Maternity and Child Health Centres catering to about 1/10th of the entire population of Bombay State.

The UNICEF have been good enough to supply equipment and drugs and diet supplements to the above centres free of charge. The World Health Organisation has deputed one Senior Medical Officer as Maternity and Child Health Consultant and two Public Health Nurses to assist in the training programme at Sirur.

It is proposed to add during 1956-57 as part of the Second Five Year Plan 37 Primary Health Units to the existing number of 78 units in Baroda and Poona Districts. 150 units are proposed to be opened in 7 other districts during the remaining 4 years of the Second Five Year Plan.

During the First Five Year Plan period each district was provided with a District Health Organisation and a mobile hygiene unit or anti-epidemic track. In addition to this there were 3 Mobile Hospital Units for the 3 Divisions.

During non epidemic times the hospital unit staff is attached to Primary Health Units in Baroda and Poona Districts.

Health Education:

Health Education forms an important field of activity in Public Health Organisation. It is imparted through various agencies both Government and Voluntary agencies as follows—

- The Public Health Department.
- The Directorate of Publicity.
- The Bombay Mothers and Children Welfare Society.
- The Arogya Mandal, Poona.
- The Sanitary Associations of Bombay, Ahmedabad and Broach.
- The Visual Education Section of the Education Department.

B.C.G. Vaccination campaign is accompanied by vast public health education programme.

making the people T.B. conscious. There are three special Publicity Units exclusively for mass B.C.G. Vaccination campaign which serve the needs of the three Registration Districts.

---

(2) HEALTH SERVICES IN MADHYA PRADESH

Director

The staff for public health work in the Directorate of Health Services, Madhya Pradesh consists of one Deputy Director, one Assistant Director, Maternity and Child Welfare and the Assistant Director, Malaria. At the District level health work is entrusted to the Civil Surgeons.

First Five Year Plan Period:

In the First Five Year Plan period the activities of the Public Health Department have been enlarged to cover several fields intended to improve the health conditions of the people. Broadly these schemes could be divided into 3 groups viz. (1) Administrative Reorganisation, (2) Communicable diseases control and (3) Training of Medical and Auxilliary Medical personnel.

In the field of administrative reorganisation the State Government opened a bureau of malaria control and a bureau of Maternity and Child Welfare under the supervision and control of Assistant Director of Health Services. Besides at the district level the offices of Civil Surgeons have been strengthened to enable them to devote more time to Public Health Work.

Achievement:

In the field of Malaria Control, the programme has been considerably extended. By the end of 1955-56, the number of villages brought under protection was 17,474 as against 1,073 villages in 1950-51. The population protection was 8 millions in 1955-56 as against 9 lakhs in 1950-51. The financial target of this scheme was 42.58 lakhs durings first five year plan. We anticipate the expenditure of only 36.4 lakhs resulting in saving of Rs. 6.8 lakhs. This is due to the non-receipt in time of assistance in the shape of equipment and transport, for the field units established. As a result of the introduction of large scale malaria control programme the total death rate which stood at 25.82 in 1950 was brought down to 17.55 in 1954 and the malaria death rate was reduced to 7.38 in 1954 from 12.93 in 1950.

In the field of maternity and child welfare considerable progress has been made during the first five year plan as will be evident from the fact that while in 1951-52 the State Governmtnt had to established even one M. & C.W. Centre. 54 M. & C.W. Centres had been opened by the end of 55-56, in the community projects, Community Development and National Extension Service Blocks. More centres could not be opened during the plan period for the very simple reason that adequate number of trained health visitors and midwives necessary for such centres were not available. The infant mortality rate which was 196.07 in 1950 was reduced to 149.55 in 1954.

B.C.G. Vaccinations as an effective preventive measures for the spread of T.B. was initiated in the State in February 1951 with establishment of three B.C.G. Vaccination Teams. This has been subsequently increased to six. By 31st December 1955, 19 districts have betn covered and approximately 2½ million people have been tested and 9 lakhs people vaccinated against T.B.

Yaws control programme has been completed ahead of scheduled time in the two districts of Chanda and Bastar where it is highly prevalent. The programme is however being expanded in order to wipe out pockets where yaws is likely to be prevalent. Out of the financial targets of 1.74 lakhs provided in first five year plan 1.66 lakhs have already been spent by end of 1955 and the balance would be fully utilised during the remaining part of the first five year plan period. During the plan period 4,10,768 were examined, 2,453 villages were visited and 31,019 cases treated. During resurvey 31,943 persons were examined in 125 villages and 1,007 cases were treated.

The filaria survey unit commenced the survey in the State early in 1955. So far survey has been carried out in 5 districts and the programme is being continued. The control unit could not however undertake its programme of filaria control for want of assisstance in the shape of transports and spraying equipments. Out of a total provision of .58 lakhs in the plan period the expenditure up to Dtcember, 1955 is only 0.11 lakhs.

There will be some saving from this head due to want of timely receipt of the central assistance.

The State Government have with tht assistance of the Central Government sanctioned the establishment of 4 leprosy subsidiary centres and one treatment-cum-study centre during the first five year plan period. Of these 5 units, only three have been established and other two could not be established for want of administrative sanction. The existing three units have been established in the districts of Raipur, Bilaspur and Chanda. Out of a total provision of 2.24 lakhs under the scheme only 1.42 lakhs have been sppent up to end of 1955. This is due to late receipt of sanction for establishment of these units and the non-tstablishment of two more centres out of a total of 5 centres sanctioned so far. Besides the establishment of leprosy subsidiary centres and study-cum-treatment centre, a provision has been made in the first year plan of about 8.23 lakhs in order to increase institutional accommodation for leprosy cases. Of this, only 3.67 lakhs up to December '55 have been utilised. The balance could not be utilised for the reason that the land acquisition proceedings undertaken in the earlier part of the 1st five year plan period could not be completed even now. Recently the technical experts have given the view that more emphasis should be given to treatment of leprosy cases in their home as against institutional treatment of leprosy cases. It is precisely for this reason that the Government of India are assisting the State Government in the establishment of subsidiary centres and treatment-cum-study centres in endemic tracts. Such centres would organise leprosy treatment in homes of leprosy cases.

Training programme:

During the plan period 161 girls have been admitted for training as Auxiliary nurse midwives. 29 health visitors have been trained and 38 are under training. Similarly 41 Sanitary Inspectors have been trained and 35 are under training. 450 professional dais have been trained up-to-date, and 100 more are expected to be trained before the end of the plan period. Besides, three training centres have been established for training non-professional dais. The number of such dais under training in these centres is 32.

The M.P. Vaccine Institute has been expanded to enable it to manufacture cholera vaccine. The building programme has been completed and the equipment has been purchased. Against the budget provision of 8.71 lakhs under the scheme about 6.21 lakhs will be spent before the end of the plan period. The remaining saving is mainly under contingencies. It was originally expected that the institute will start manufacturing cholera vaccine sometime in 1955 but this could not be achieved due to fact that trained technical personnel were not available and even now the staff position is not satisfactory. Every effort is being made to train the persons outside the State and it is hoped by the end of the plan period the institute will be in a position to undertake large scale cholera vaccine manufacture.

Secand Sive Year Plan Period:

The 2nd Five Year Plan envisages the establishment of 2 additional bureaus (i) Bureau of Health Education, (ii) Bureau of Vital Statistics and Epidemiology at the State head-quarters. This is so far as it relates to administrative reorganisation.

In the field of communicable diseases control the national malaria control programme will be further expanded in the State with the establishment of 5 more units already sanctioned in 1955-56 but which could not operate so far for want of central assistance. These additional units will, it is hoped, be functioning early in 1956-57. Between these 17 units a population of approximately 14 millions residing in highly malarious tracts will be brought under protection. The filaria survey of the State would be completed and a pilot filaria control programme would be fully established and the same will be continued throughout the plan period. The B.C.G. Vaccination campaign would be continued as it is at the moment and would later be integrated as part of the regular activities of the Public Health Centres to be established in the State. The Anti-Yaws campaign will be completed by the end of the 3rd year in the Second Five Year Plan.

The 2nd Five Year Plan programme for Lerpsy control invisages the establishment of only 7 more leprosy subsidiary centres besides the continuation of the 5 already sanctioned, bringing the total to 12. Even after the establishment of all the 12 units a state-wide coverage would not be achieved, if more funds are made available additional units would be established.

It is only in the field of training that our 2nd Five Year Plan hopes to considerably expand its activities. As indicated earlier, there are 180 midwives under training and this figure will be increased to 420 by the end of 2nd Five Year

Plan period. As against 29 health visitors trained during the 1st Five Year Plan period we hope to train 150 by the end of 2nd Five Year Plan period. The Training programme also envisaged the training of 200 sanitary inspectors, 15 public health nurses, 80 medical graduates, 10 postgraduate training in public health, 1,000 professional dais, 500 non-professional dais and also training of 50 leprosy technicians. This training programme is planned with a view to provide adequate trained personnel for the various schemes that we have in view for the implementation of the 2nd Five Year Plan.

It is also proposed to establish three regional food laboratories one each at Raipur, Jabbalpur and Amravati during 1965-57 i.e. 1st year of the 2nd Five Year Plan.

FACILITIES FOR TREATMENT OF TUBERCULOSIS AFTER FIRST FIVE YEAR

Plan Period	Position before the plan period	Position after the plan period
T.B. Hospital ...	Nil	1
T.B. wards attached to different hospitals ...	1	9
T.B. Clinics ...	2	4
Sanatorium ...	1	3
T.B. bed ...	226	800

(3) HEALTH SERVICES IN THE HYDERABAD STATE

Director

The main objective of the Medical and Public Health Services is to prevent sickness, relieve human suffering and keep the people in sound health. All the schemes and activities of the Department, therefore, aim at achieving this objective. The Department has rapid progress in the recent years and now stands in the forefront in the field of national health throughout India.

The Director is assisted by two Deputy Directors and 4 Assistant Directors of Public Health.

Institutions for treatment :

(a) 8 Special Institutions, 22 General Hospitals and 198 Dispensaries are being run by the Hyderabad Government to provide Medical relief to the people.

The total number of beds available to the public in all Hospitals and Dispensaries is 5,781 —one bed for about 3,000 population.

Among the major Institutions opened during the year 1955-56 were the Mahatma Gandhi Hospital with 100 beds at Warangal and the Radium Institute and the Cancer Hospital with 100 beds at Hyderabad.

A new Hospital building was constructed at Sangareddy and Nanded Headquarters.

(b) Two Mobile Eye Camps are organised in different parts of the State every year.

(c) One Blood Bank is functioning at the Osmania General Hospital.

Control of Communicable Diseases :

Plague has been eradicated, while the incidence of Cholera and Smallpox have been much reduced. Malaria has been brought completely under control in highly endemic zones and great reduction has been achieved in the other areas. Six Units under the National Malaria Control Programme are working in different parts of the State. One Unit to protect about 30,000 persons against Filariasis has been established at Manair in Karimnagar district. Preventive measures against Typhoid, Poliomyelitis, Diphtheria and other Infectious Diseases are being adopted with good results.

The campaign against Yaws is being continued. 4 Teams are working with aid from the UNICEF.

Rural Medical Relief :

(a) 1,557 Village Medicine Boxes are functioning for the needs of rural areas where there are no dispensaries nearby. These contain elementary remedies for first aid and treatment of minor ailments. Teachers, patels and Social Workers of villages are given training for a period of 10 days in the use of these Village Medicine Boxes. Medicines are given free of cost. About . . lakh persons were thus treated since 1953.

(b) 20 Medical & Health Units have been established in the State. These provide integrated Medical and preventive services in the rural areas including Medical treatment with ambulance service; Maternity and Child Health including training of indigenous dayas, control of Communicable Diseases; Environmental Sanitation including water supply, drainage and housing; Health Education, School Health and Vital Statistics. These Units have proved to be the most effective and economical method of rendering medical aid to the rural population.

(c) 4 Mobile Medical & Health Units are also functioning in the State. One Medical Officer and one Health Inspector is attached to each Unit. They tour in the rural areas in Van and provide curative and preventive services.

(d) 17 Community Project, 17 N.E.S. Blocks and 4 Health Centres in the N.E.S. Blocks have been established. These provide curative and preventive services in the rural areas on the same lines as Medical and Health Units and are similarly stafftd.

Maternal and Child Health :

Maternity and Child Welfare Centres are working in the twin cities of Hyderabad, Secunderabad and District Headquarters. There are 19 main M.C.H. Centres in rural and 4 in urban areas and 69 M.C.H. Sub-centres in rural and 10 in urban areas. With the help of the WHO and UNICEF great progress has been achieved in the field of Maternity and Child Welfare.

Training :

(a) The Osmania Medical College provides admission to 110 students every year for M.B.B.S. Two more Medical Colleges one (Gandhi Medical College) at Hyderabad and the other at Aurangabad have been opened recently. 50 students will be admitted to each College.

(b) Training of Nurses, Health Visitors, Auxiliary Nurse-midwives, Midwives and indigenous dayas is being undertaken in different hospitals and special Institutions.

(c) 100 candidates are admitted to the Public Health Institute every year, for training as Health Inspectors (Sanitary Inspectors).

School Health :

Two School Clinics with 7 Medical Officers both male and female are functioning in Hyderabad and Secunderabad cities. These Medical Officers visit the Schools for medical inspection. In the districts and taluks the Medical Officers of the Hospitals and Dispensaries perform these duties.

T. B. Control :

(a) Two Sanatoria, one Hospital and 5 clinics are functioning in the State.

(b) *B.C.G. Vaccination :* So far about 18 lakh persons have been tested and 6 lakh persons vaccinated. It is expected to protect the entire population of the State under the age of 20 years within the next 2—3 years.

(c) *Domiciliary T.B. Treatment Campaign :* Six Centres with 12 Medical Officers and necessary staff are functioning in the cities of Hyderabad and Secunderabad. Similar arrangements have been provided in 5 districts in the State.

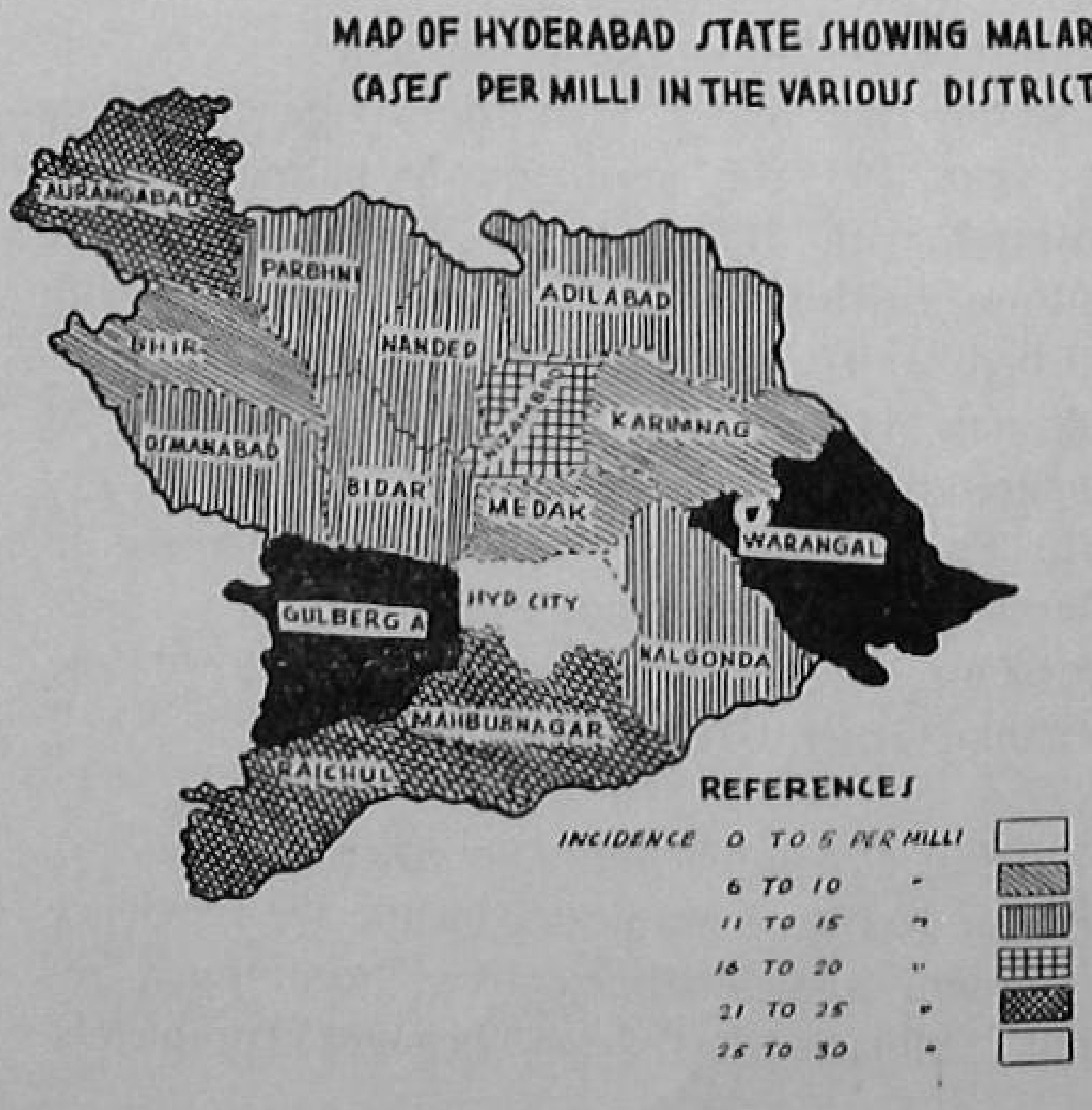
(d) The Mass Miniature Radiographic service has been started. T. B. Survey with aid from I.C.M.R. is also being carried out.

Leprosy Control :

173 Leprosy Clinics are working in the State. There is a Leprosy Hospital at Dichpalli with 450 beds, a Leprosy Hospital at Latur with 20 beds; a Leprosy Investigation and Treatment Centre at Zaheerabad with 120 patients, two Leprosy Colonies with 50 beds each, one Municipal Leprosy Home in Hyderabad with . . . beds and two Leprosy Control Units.

Environmental Hygiene :

A Bureau of Environmental Hygiene under a qualified Public Health Engineer was established



in 1954. This Bureau advises the local bodies like Municipalities in properly dealing with the water supply, drainage and co-related problems.

Health Propaganda :

There is a Bureau of Health Education, which carried out intensive Health Propaganda by all known scientific methods. The Hyderabad Health Museum is considered to be the best throughout the East. It is visited by about 25,000 people every month. There are two Cinema Cars which carry the message of health right to the very doors of the rural population.

Nutrition :

The Bureau of Nutrition carries out Diet and Deficiency Diseases Surveys. Experiments on food intoxication has been carried out.

Public Health Laboratories :

Lymph and Cholera Vaccines are prepared in this Laboratory. Bacteriological and Chemical examinations of all kinds are also carried out.

Employees' State Insurance Scheme :

This caters to the Medical care of about 18,000 insured Factory workers in the cities of Hyderabad, Secunderabad and suburbs and was inaugurated on 25th April 1955 by the Union Labour Minister. Three Full time and 8 part-time dispensaries have been established under this scheme.

Registration of Births & Deaths :

The compulsory registration of Births and Deaths in the entire state was enforced from 1st January 1955.

Family Welfare Centre :

One Family Welfare Centre and 17 Family Planning clinics are working in the twin cities of Hyderabad—Secunderabad and district Headquarters.

(4) HEALTH SERVICES IN RAJASTHAN

Director

General information :

The Director of Medical and Health Services, Rajasthan, is assisted by two deputies—one for medical side and the other for health side. One of two Assistant Directors of Health Services has been specially deputed for Planning and Developmental work.

Budget (1955-56) :

The total budget for year was Rs. 1,40,96,200/- allotted as follows: Medical and Hospital establishment—Rs. 1,05,11,000/-; Developmental scheme (Medical)—Rs. 11,34,329/-; Public Health —Rs. 11,39,000/-; and Developmental Scheme (Public Health)—Rs. 5,68,000/-. Including the Developmental scheme budget on public health is only 12.1 per cent of the total budget on Medical and Public Health services.

Medical facilities :

There are 9 hospitals of Class I and Class II types providing 2572 beds for indoor patients. In addition to these hospitals there are 405 medical institutions with 3182 beds. During 1955, 8 new dispensaries and 8 maternity centres were opened.

There are no separate Eye Hospitals owned by the state but there are Ophthalmic Department attached to the hospitals providing 313 beds for eye patients. The Governments also arranged mobile eye and surgical camps at 5 places during the year to provide facilities to eye patients.

X-ray facilities exist in 31 institutions and electrotherapy apparatus in a few of them.

Three hospitals, one each at Jaipur, Jodhpur and Udaipur, have accommodation for 204 mental patients.

Facilities for antirabic treatment exist in all big hospitals and 28 other institutions.

The S. M. S. Medical College at Jaipur is the only college for medical education in Rajasthan.

The following categories of Nursing education are provided in the Mahatma Gandhi Hospital at Jodhpur and Zenana Hospital at Jaipur, both of which are affiliated to the East Punjab Nursing Education Council, Ludhiana: (a) General Nursing, (b) Junior Nursing, (c) Nursing of Women and Children, (d) Nursing, (e) Midwives, (f) Nurse-dais, (g) Male Nursing. The Zenana Hospital, Jaipur, trains only (d) and (f).

Vital statistics :

Collection of Vital statistics in Rajasthan is still in infancy. The date of births and dates

were collected and compiled only from 100 towns and 95 tehsils in 1955. Efforts are being made to bring all the areas under registration of births and deaths. The ratio of birth and death so far is running 2:1 (96460 births against 47741 deaths).

Communicable Diseases :

Only Smallpox cases and deaths have been recorded viz. 2038 deaths against 3499 cases. The total numbers of primary and revaccination performed are 477105 and 339704 respectively.

Antimalaria activities :

Two National Malaria Units, one each at Udaipur and Jodhpur, are operating. Besides antimalarial drugs are also distributed.

Anti-Guinea-worm activities :

This disease is prevalent in some parts of the state. Every effort is being made to disinfect the step wells and tanks which act as source, in addition to the conversion of step well into draw wells. A detailed scheme for the purpose is under consideration of the Government.

There are two isolations, one at Jaipur and one at Jodhpur.

Leprosy :

There are two Leper Asylums, one each at Jodhpur and Jaipur with 55 and 25 beds respectively. The numbers of in-patients treated in 1955 were 65 and 67 respectively against 67 and 77 in the previous year.

Venereal Diseases :

There is no separate V. D. Clinics in Rajasthan but facilities for treatment are available at Jaipur, Jodhpur and Bikaner Hospitals. In 1954 total number of V. D. Cases was 283 indoor and 5918 outdoor.

Tuberculosis :

There are 17 institutions and T.B. hospitals in Rajasthan having 322 beds, cases are also treated in hospital with X-ray equipments. All the sanatoria and hospitals except one at Jaipur for the Refugees are maintained by the State Government. The total number of patients treated indoor was 7298 and outdoor 11005 in 1954.

B. C. G. Vaccination :

The total number of persons tested was 443799 at which 100161 were found negative and 102544 vaccinated.

Rural Medical Relief :

The medical care in the rural areas is given through the existing hospitals and dispensaries 160 in number. Health Officers, Sanitary Inspectors and vaccinators intensively tour to check, control and distribution of preventive medicines etc.

Blood Transfusions :

There are two blood banks one each at Jaipur and Jodhpur. The quantity of blood collected in 1955 is 261627 c.c.

Public Health Laboratories :

There are two Public Health Laboratories in Rajasthan, one each at Jaipur and Jodhpur, which undertaken to test all samples of water, food, drugs, excise articles etc.

UNICEF :

2,50,000 lbs. of skin milk was received as a gift from UNICEF for distribution to under-nourished children and expectant and nursing mothers. Messrs. Cars Food Supplying donated 1500 tons of milk and 1500 tins of ghee for distribution to outdoor T.B. patients and their families through approved centres.

WHO assistance :

The WHO has proposed to assist in the following training programmes:

(1) Training of auxiliary Nurse-midwives and midwives.
(2) T.B. control and training centre.
(3) Health education.
(4) MCH Nursing programe.
(5) Neuro and cardiac surgery.
(6) Dental health.
(7) Leprosy control and upgrading the state Leprosy Hospital.

The proposed Developmental Schemes under the Second Five-Year Plans are:

1. Opening of 166 dispensaries and 20 Primary Health Centres.
2. Establishment of 6 Ambulance Units.
3. Improvement of District and Divisional Hospitals.
4. Radium Institute at Jaipur.
5. Neuro and Cardiac Surgery.
6. Five teams for BCG Vaccination.
7. Six T.B. Clinics, 200 isolation beds for T.B. patients and 200 beded T.B. Sanatorium at Bari.
8. Six teams for National Malaria Control.

9. Six Public Health Laboratories.
10. Nutrition Survey of 500 villages.
11. Improvement of Medical College.
12. Training of Compounders, Auxiliary Midwives, Sanitary Inspectors and T.B. Health Visitors.
13. Health Education.
14. Two Units for Guinea-worm control.

A sum of 2.85 crores has been allotted for the above schemes.

---

(5) HEALTH SERVICES IN WEST BENGAL (1947—1955)

Director.

Land & People :

The State of West Bengal comprpises an area of 31,048 sq. miles and is inhabited by 2,62,05,532 people, of which 22.9% live in towns and 77.1% in rural areas. For administrative purposes, the State has been divided into 15 districts and 45 sub-divisions, having 84 municipal towns, 255 police stations, 2,079 Unions, and 35,063 villages. Towns, with a population of 30,000 and over, number 36, of which 5 are with a population of 1 lakh and over, including the city of Calcutta. The normal increase in the population of the State is about 3,00,000 annually. The density of population per sq. mile is already 844.0, being the highest in India. The heavy influx of refugees from East Pakistan, as an aftermath of Partition of India, on the eve of her Independence, having the characteristics of a continuous flow with occasional upsurge, has aggravated the problems of health, rehabilitation and employment, as well as the burden on land, already over populated.

Organisation of Health Services :

Being a welfare State, maintenance of health is now a primary concern of the Government. The StateMinistry of Health visualise the new approach to modern concept and principles of positive health and move onward to give a concrete shappe of things to come. The directives on Medical & Public Health Plans and Policies are executed through the Medical & Public Health Department, headed by the Secretary-cum-Director of Health Services.

The curative and preventive services have been integrated and extended all over the State with specific emphasis on rural areas where the agriculturists and majority of the common people live, but hitherto left uncared for and neglected. Of late, Government are seriously pondering over the possibilities of bringing public health services under State management with a view to effect improvement of these services. West Bengal is perhaps the only State in India, which has posted technically qualified Health Officers for each of the sub-divisions, under whose control epidemic staff emplpoyed by the Government are detailed to work in areas affected by any out-break of epidemic diseases.

Improvement in Health Service 1947:

An all round impprovement of health has been achieved during the years 1948 to 1955, (See Fig. 1), in spite of the fact that a great deal remains to be done, as yet. The span of life has increased by 10.7 years since 1931. The life expectancy was 24.86 years in 1931, whereas it is now 35.60 (Fig. 2). The death rate per mille of population has dropped from 18.1 in 1948 to 8.8 in 1955, indicating a steep decline of death rate by 51.3%, and increase in birth rate during the corresponding period by 14.5%. The gap between the birth and death rates has thus widened resulting in the consequent rapid growth of population. The health services have combated effectivity towards elimination of epidemic diseases, which used to bring, in the past, ruin and devastation to the people.

During the years 1948 to 1955, not only the specific mortality rates due to diseases have come down conspicuously but also the mortality rates at each of the age-groups beginning from the first day of life to that of 60 years and above have declined to a considerable extent. The infant mortality rate has decreased by 45.7% and maternal mortality rate by 48.2%. The steady fall in infant and maternal mortality rates is a hopeful sign, which augurs well for the country. The death rates of small-pox, cholera, malaria and tuberculosis have also been reduced by 95%, 66%, 83% and 50% respectively.

212 Mobile Medical Units are maintained by Government for epidemic control work. In 1955, 5,318,109 persons were inoculated against cholera and 7,364,081 vaccinated against small-pox.

Control of Malaria:

Spectacular results have accrued from the National Malaria Control Programme: During 1954-55, about 76.4% and 61.1% of the area and population respectively of West Bengal have been covered by the sixteen Malaria Control Units working in the State.

Control of Tuberculosis:

The incidence of tuberculosis appeared in menacing form in this State in the trial of War and last Bengal Famine of 1943-44 as well as due to heavy influx of refugees from East Pakistan as a sequel to the partition of Bengal along with wide spread unemployment and malnutrition. A gradual rise in the number of tuberculosis cases treated in hosppitals and dispensaries has occurred during 1947 to 1953. But during 1947 to 1954 there has been a decline of 64.9% in case fatality rate of tuberculosis due to the uses of antibiotics in recent years. The tuberculosis death rate for this State has also decreased from .4 in 1948 to .2 in 1955. The number of tuberculosis beds was 956 in 1947 and nof it is 2,731 i.e. an addition of 1,775 beds, have since been effected. In Calcutta 7 Mobile Units are now functioning for domiciliary treatment of tuberculosis patients not finding their admission into hospitals due to dearth of accommodation.

A mass B.C.G. Vaccination Scheme has been under operation since 1949 to confer immunity to the people against tuberculosis. In this State, up to 1955, 55,95,706 persons have so far been tested with tuberculin and 22,74,212 have been vaccinated with B.C.G.

Besides, extensive anti-tuberculosis propaganda work and educative campaign are being carried out with slides and documentary films by the Publicity staff of the Government as well as the Tuberculosis Association, West Bengal.

Expenditure on Health:

The Budget provision for the current year of the State on Medical and Public Health purposes is Rs. 8,255 crores which works out a ratio of 16.7% of the total Revenue Receipts for the State. The annual per capita expenditure on health is now Rs. 3-2-5, being the highest in Indio, and exceeding the amount viz. Re. 1-14 as., as recommended by the Health Survey and Development Committee, under their 10 years Plan. The per capita expenditure on health has gradually been raised from Rs. 0-15-3 in 1947 to Rs. 3-2 in 1956.

Rural Health:

In 1948, the Rural Health Services Scheme towards establishment of Health Centres, in each of the unions and thanas of West Bengal wherein curative and preventive aspects of medicine have been integrated, came into opperation. By the end of March, 1956, 52 Thana and 214 Union i.e. total 266 Health Centres have been established with 1,620 and 1,562 beds respectively.

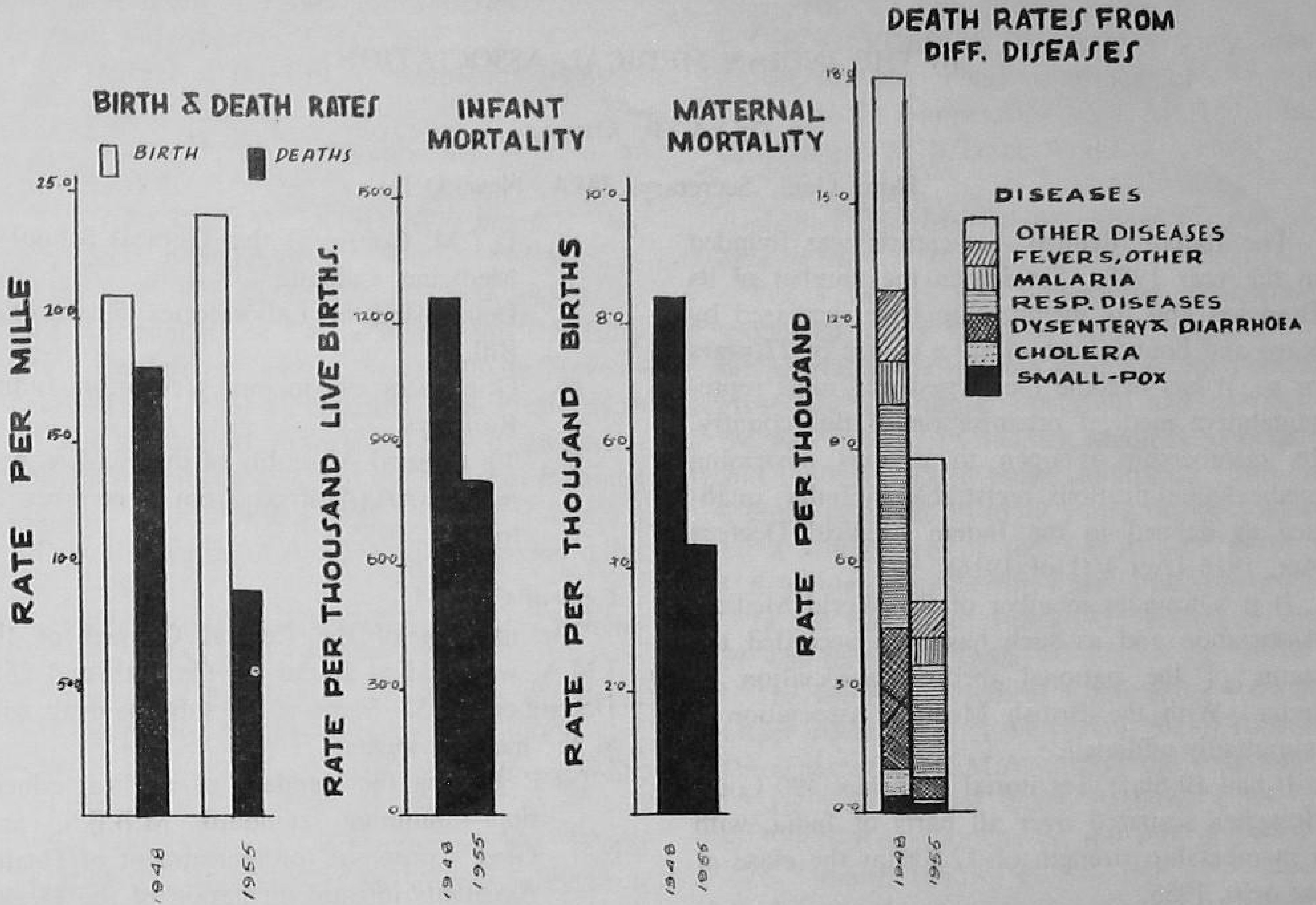
The total number of beds now available in the State is 22,161, the present bed ratio of West Bengal being .85 per 1,000 population, the highest figure in India. The bed ratios in districts of Calcutta, Darjeeling and Nadia are 2.84, 2.17 and 1.27 respectively, and have already crossed the target of 1.03 mille of population recommended by the Bhore Committee.

There are at present 100 Maternity & Child Welfare Centres, 26 Tuberculosis Clinics and 99 Leprosy Clinics including 6 for backward areas inhabited by scheduled tribes. During the period, 1947 to March, 1956, Maternity beds have increased by 213.3%, Tuberculosis beds by 185.6%, Infectious beds by 31.9%, which is a positive achievement, so far medical care for the people is accounted for. Besides the above, 13 Family Planning Centres are functioning in this State to impart technical knowledge and exhibit modern devices towards reducing the size of families to an optimum level, which is deemed essentially a necessity today. It is also worthwhile to mention here that there are about 17,000 medical practitioners, in this State. This works out a ratio of 1 doctor to 1,524 persons in contrast to the ratio of 1 : 2,000, as recommended by the Bhore Committee in their 10 years programme.

Medical Education:

The facilities for Medical Education should run parallel with the expansion of health services. Since 1947, Medical Schools of West Bengal have been urgraded into colleges. There are four Medical Colleges today, wherein 505 regular students and 200 additional medical licentiates are admitted annually for the M.B.B.S. courses and one Dental College accommodating 30 students per year for undergoing training in B.D.S. Course. The School of Tropical Medicine, Calcutta, and the All India Institute of Hygiene & Public Health, Calcutta, have been imparting post graduate training in Public Health, Tropical Medicine, Maternity & Child Welfare, Public Health Sanitation and on allied subjects. The Senior and Junior Nursing & Midwifery Courses

VITAL STATISTICS OF WEST BENGAL



exist in different hospitals, wherein 904 pupils are impadted training annually. Government scholarships are awarded to a few girls who are sent every year to Delhi College of Nursing and also to qualified Nurses for Post-graduate training. There are one Pharmacy Training Centre with 50 seats at Jalpaiguri, a Training Course of Dressers with 50 seats at Bankura and facilities for Doctors in having Post Graduate Training in D.G.O., D.O.M.S., T.D.D. and Anaestheiology Course in Calcutta. Of late, arrangements have been made at the Seth Sukhlal Karnani Memorial Hospital (formerly Presidency General Hospital), Calcutta, for Electro-encephalography, Venticulography, Plastic and Neuro Surgical operations and also for Post Graduate Teaching in Neuro-Surgery, M.S., M.D., and M.O. Courses; and the technical expperts on the lines have since been recruited.

Water Supply:

In West Bengal, the number of tube wells and masonry wells existing on 15-8-54 are 29,000 and 10,000 respectively. There are 37 municipalities provided with water works. The State is now able to provide safe water to 96.7% of urban and 56.1% of rural population. Besides, the construction of 7 Water Works as detailed below were undertaken during the period from 15.8.54 to 31.3.55:—

1. Bankura Water Supply Remodelling Scheme.
2. Raniganj Water Works Electrification.
3. Suri Water Works Improvement Scheme.
4. Uttarpara Water Works Remodelling Scheme.
5. Electrification of Howrah Water Works.
6. Kalimpong Water Supply Extension Scheme.
7. Howrah Water Works Augmentation Scheme.

Recruitments:

New avenues for appointment of qualified medical and ancillary staff are intently looked for, towards solution of unemployment problems so far as this relates to Medical and Public Health Department. During the period from 15-8-54 to 31-3-55, 303 Doctors, 141 Nurses and Midwives, 96 Medical and Health Staff, 56 Compounders, 31 Medical Technicians and 9 Health Visitors were recruited in connection with the operations of various health projects undertaken by Medical and Public Health Department.

Medical and Public Health Organisation

(i) THE INDIAN MEDICAL ASSOCIATION

DR. A. P. MITTRA

Hon. Genl. Secretary, IMA, New Delhi

The Indian Medical Association was founded in the year 1928. Since then the number of its Branches and its membership have increased by leaps and bounds and within a course of 27 years or so, it has become the largest and most representatative medical organisation of this country. Its membership is open to persons possessing medical qualifications registrable in India; qualified as defined in the Indian Medical Degrees Act, 1916 (Act VII of 1916).

It is a founder member of the World Medical Association and as such has been accorded the status of the national medical association of India. With the British Medical Association it is mutually affiliated.

It had 10 State/Territorial Branches, 490 Local Branches scattered over all parts of India, with a membership strength of 17,800 at the close of the year 1955.

Working Committee

During the year the Working Committee dealt with the following subjects among others:—

1. Working Conditions of the A.M.O.'s in Tea Gardens.
2. Amendment to the Indian Mtdical Council Act.
3. Prohibition.
4. 2nd Five Year Plan. Preparation of a comprehensive Health Scheme which was submitted to the Planning Commission.
5. Employees' State Insurance Scheme.
6. Recommendations of the First World Conference on Medical Education held in London in 1953.
7. Rural Medical Practitioners benefit scheme.
8. Study of Industrial Medicine.
9. Report of the Pharmaceutical Enquiry Committee.
10. Controversy regarding B.C.G. Vaccination campaign.
11. Relief for flood affected areas of Orissa, Bengal & Bihar etc.
12. Spirituous Preparations Bill.
13. Coal Mines Labour Welfare Committee.
14. D.T.M. Course at the Tropical School of Medicine, Calcutta.
15. Delhi Medical Laboratories Registration Bill.
16. Grievances of doctors serving in Indian Railways.
17. 9th General Assembly of the W.M.A. held in Vienna (Austria) from September 20 to 26th, 1955.

Central Council

The meeting of the Central Council of the I.M.A. was held at Jaipur on the 24th and 25th December, 1955. Some of the subjects dealt with at the meeting were:—

(a) Regarding the standard of medical education—minimum standard M.B.B.S. and Govt.'s proposal for recruitment of Health Assistants in implementation of the Health Scheme during the 2nd Five Year Plan.
(b) Safe water supply scheme.
(c) Reiteration of the recommendations of the I.M.A. on the Pay and Status of Medical Officer in Government and other services.

All India Medical Conference

The 32nd All India Medical Conference was held at Jaipur on the 26th, 27th and 28th Decem ber, 1955. Dr. S. C. Sen the out-going President addressed the gathering and introduced Dr. A. C. Ukil as the new President for the year 1956. Dr. Ukil in his Presidential speech dealt with:—

1. India's Health Status in relation to Planning.
2. Medical Education.
3. Postgraduate training.
4. Drugs position in the country.
5. The national language and Public Health Education in India.
6. The future of the medical profession, etc. etc.

The Conference was largely attended and well conducted throughout. Delegates and visitors attending evinced keen interest in the proceedings of the Conference and the Pharmaceutical Exhibition organised along with it.

Branches and its membership have increased by leaps and bounds and within a course of 27 years or so, it has become the largest and most representatative medical organisation of this country. Its membership is open to persons possessing medical qualifications registrable in India; qualified as defined in the Indian Medical Degrees Act, 1916 (Act VII of 1916).

It is a founder member of the World Medical Association and as such has been accorded the status of the national medical association of India. With the British Medical Association it is mutually affiliated.

It had 10 State/Territorial Branches, 490 Local Branches scattered over all parts of India, with a membership strength of 17,800 at the close of the year 1955.

Working Committee

During the year the Working Committee dealt with the following subjects among others:—

1. Working Conditions of the A.M.O.'s in Tea Gardens.
2. Amendment to the Indian Mtdical Council Act.
3. Prohibition.
4. 2nd Five Year Plan. Preparation of a comprehensive Health Scheme which was submitted to the Planning Commission.
5. Employees' State Insurance Scheme.
6. Recommendations of the First World Conference on Medical Education held in London in 1953.
7. Rural Medical Practitioners benefit scheme.
8. Study of Industrial Medicine.
9. Report of the Pharmaceutical Enquiry Committee.
10. Controversy regarding B.C.G. Vaccination campaign.
11. Relief for flood affected areas of Orissa

15. Delhi Medical Laboratories Registration Bill.
16. Grievances of doctors serving in Indian Railways.
17. 9th General Assembly of the W.M.A. held in Vienna (Austria) from September 20 to 26th, 1955.

Central Council

The meeting of the Central Council of the I.M.A. was held at Jaipur on the 24th and 25th December, 1955. Some of the subjects dealt with at the meeting were:—

(a) Regarding the standard of medical education—minimum standard M.B.B.S. and Govt.'s proposal for recruitment of Health Assistants in implementation of the Health Scheme during the 2nd Five Year Plan.
(b) Safe water supply scheme.
(c) Reiteration of the recommendations of the I.M.A. on the Pay and Status of Medical Officer in Government and other services.

All India Medical Conference

The 32nd All India Medical Conference was held at Jaipur on the 26th, 27th and 28th December, 1955. Dr. S. C. Sen the out-going President addressed the gathering and introduced Dr. A. C. Ukil as the new President for the year 1956. Dr. Ukil in his Presidential speech dealt with:—

1. India's Health Status in relation to Planning.
2. Medical Education.
3. Postgraduate training.
4. Drugs position in the country.
5. The national language and Public Health Education in India.
6. The future of the medical profession, etc. etc.

The Conference was largely attended and well

"SWASTHYA", monthly lay Journal in Hindi.

Drs. S. C. Sen, G. O. Karunakaran and A. C. Ukil represented the I.M.A. at the Medical Education Conference held in New Delhi in November, 1955. Dr. S. C. Sen, the then President of the Indian Medical Association served, on invitation, on the Health Panel of the National Planning Commission in autumn 1955.

Representatives of the I.M.A. on various statutory bodies:—

(1) *Employees' State Insurance.*—Dr. Chamanlal M. Mehta.
(2) *Medical Benefi Council.*—Dr. C. S. Thakar & Dr. B. Thungamma.
(3) *Drugs Technical Advisory Board.*—Dr. K. K. Sengupta.

The 9th General Assembly of the World Medical Association held in Vienna in September 1955, was attended by Dr. S. C. Sen (Delhi) and Dr. N. V. Patel of Broach as Delegates, and by Dr. A. N. Roy of Calcutta and Dr. Vinod Beharilal of Delhi as Observers.

The Fourth Commonwealth Conference held at Toronto, Canada in June 1955 was attended by Dr. A. P. Mittra the Hony. General Secretary. He also attended the Annual Meeting of British Medical Association which was also held at Toronto in June 1955 jointly with the Annual Meeting of the Canadian Medical Association.

Construction of Building for the Central Office of the I.M.A.

After years of negotiation, the Government of India have been pleased to allot a plot of land measuring about 0.5 acre in the Indraprastha Estate, near Hardinge Bridge, New Delhi for the purpose of constructing the Association Building.

Flood Relief and Distress Relief Fund of the I.M.A.

The Association organised Relief Committees for the flood stricken areas of U.P., Bengal, Bihar, Orissa and Assam through its relative State/Terri-

Residency and Internships abroad f
bers of the I.M.A.

The Residency and Interneship pr
sponsored every year by this Ass
higher studies or training in U.S.A. f
Hospitals with the co-operation and
the American and Canadian Medical A
and the hospitals in those countries.
a batch of about 30 to 40 young docto
by a Committee of the I.M.A. is s
U.S.A. and Canada for Post Graduat
In the middle of June, 1955 such
37 was sent from India.

The following Medical Conferences
under the auspices of the various State/
Branches of the I.M.A. during the yea

1. 14th Bengal State Medical C
held at Calcutta on the 19th &
ruary, 1955.
2. 6th Assam Medical Conference
Shillong from 25th to 28th F
1955.
3. 2nd Bombay State Medical Co
held at Bombay on the 19th
March, 1955.
4. 21st Andhra State Medical Co
held at Nellore on the 23rd an
April, 1955.
5. 8th Gujarat & Saurashtra Medica
ference held at Patan (North Gujara
30th April to 2nd May, 1955.
6. Madhya Bharat State Medical Conf
held at Indore on 9th and 10th
1955.
7. 8th Orissa State Medical Conferenc
at Cuttack on the 10th and 11th Se
ber, 1955.
8. 6th Travancore-Cochin Medical C
ence held at Trivandrum on 15th and
October, 1955.
9. 24th Mysore Medical Conference he
Shimoga on the 28th, 29th and 30th

11. 15th Maharashtra & Karnatak Territorial Medical Conference held at Jalgaon from 4th to 6th November, 1955.
12. 15th Bihar State Medical Conference held at Purnea from 5th to 6th November, 1955.
13. 10th Madras State Medical Conference held at Salem on the 26th and 27th November, 1955.
14. 2nd Delhi State Medical Conference held at Delhi on the 25th, 26th and 27th November, 1955.
15. 20th U.P. State Medical Conference held at Bareilly on the 27th and 28th November, 1955.
16. 6th Hyderabad State Medical Conference held at Gulbarg on the 4th & 5th December, 1955.

Nearly all of these Conferences were inaugurated by the Chief Ministers or Ministers of Health of the respective States where the Conferences were held. All the Conferences held Scientific Sessions and organised Pharmaceutical exhibitions. These were attended by a large number of delegates and distinguished visitors.

Many important subjects relating to medical profession, medical education and public health were taken up and discussed at these conferences and resolutions were unanimously passed, such as:—

1. Rural Health & type of Medical aid or relief.
2. Medical education, Medical Research and medical practice.
3. Indian Medical Council Act and amendments proposed thereto.
4. Medical Certificates.
5. Nursing profession.
6. Mental Health.
7. E.S.I. Scheme.
8. Refresher Courses and Post-Graduate Medical Education.
9. Pharmaceutical Industry.
10. Indigenous system of medicine.
11. 2nd Five Year Plan.
12. Family Planning.
13. B.C.G. Vaccination.
14. Auxiliary Medical Personnel.
15. Preventive and socialised medicine and industrial medicine.
16. General Medical Practice.
17. Auxiliary aids in the public health set up.
18. Urban and Rural water supply and sanitation etc.

Observance of Health Week

Some State/Territorial Branches of the I.M.A. observed Health Weeks in their respective territories during the year. All the Local Branches under the jurisdiction of each State/Territorial Branches of the I.M.A. observed this Health Week. This week was meant for giving Health Education to the lay public. There were public utility lectures, baby shows, sanitation drive, health exhibitions, health films, mass inoculation, physical demonstrations, and family planning programmes.

(2) THE TUBERCULOSIS ASSOCIATION

Dr. P. V. Benjamin, New Delhi

The history of the development of non-official anti-tuberculosis worn in our country dates back to the early years of this century, when some Christian missionaries started a few institutions here and there for the treatment of the tuberculosis. The movement became more organised when it was decided that the public subscription collected to commemorate the recovery from illness of King George V during 1928-29 be devoted to organise nation-wide anti-tuberculosis work in the country, and the King George V Thanksgiving (Anti-Tuberculosis) Committee was formed. In December, 1937 a special fund called King Emperor's Anti-Tuberculosis Fund, totalling about ten million rupees was raised by Lady Linlithgow, wife of the then Viceroy of India. Ninety-five per cent of these collections was returned to the Provinces and States in which the monies were raised. With the five per cent of the money retained for central activities, and direct donations received for the purpose, the Tuberculosis Association of India was formed in February, 1939. Lady Linlithgow was its founder-President. During the last nine years Rajkumari Amrit Kaur, Union Minister for Health, Government of India, has been its President. This Association has 20 affiliates at present.

The Association has played a significant role in promoting anti-tuberculosis measures on scientific lines in co-operation with other health agencies. In addition to carrying out anti-tuberculosis propaganda, the Association has trained doctors, social workers and health visitors and impressed upon governments the need for training a large number of such personnel. It has advised governments and associations on the need for evolving certain standards in diagnosis and treatment, and generally in anti-tuberculosis work. This Association organised every year a conference of tuberculosis workers in the country and also a conference of administrative officers of the affiliated associations. On its recommendations post-graduate diploma courses in tuberculosis diseases have been instituted in about half a dozen Indian universities. The two institutions started by the Association, viz., the Lady Linlithgow Sanatorium, Kasauli, near Simla in North India, and the New Delhi Tuberculosis Clinic in Delhi, provide facilities for the training of personnel and also for diagnosis and treatment ofthe tuberculosis. The Delhi Clinic has now been developed as one of the three training and demonstration centres in India. With Government help the Association has also constructed a hospital in Mehrauli near Delhi. The Association has at present 250 beds; 50 beds out of which have been earmarked for tuberculosis children. The Association has treated over 410 ex-service men from money provided by a special fund. It has advised Governments and Associations on the proper use of special medicines such as streptomycin, PAS and isoniazid in the treatment of tuberculosis. Its efforts to secure employment for ex-patients have received and have been receiving encouraging response from Government and business organisations.

Sales Campaign

The Association started the Tuberculosis Seal Sale Campaign in 1950. The Campaign commences on October 2, Mahatma Gandhi's Birthday, every year and terminates on January 26. the Republic Day. The last six campaigns have brought in over forty lakhs of rupees. The State Associations are using these collections for their anti-tuberculosis work.

Committees

The Tuberculosis Association of India is assisted in its work by different committees and sub-committees. These committees include distinguished public workers and high government officials.The Central Committee is the governing body. This body has delegated powers to various sub-committees, the chief of which are the Executive and Finance Sub-Committees. The Executive Sub-Committees meet frequently and reviews important activities of the Association while the Finance Sub-Committee examines the budget and advises on financial matters. The Technical Committee advises Governments and Associations on questions such as the establishment of institutions, training of personnel, use of antibiotics and health education. A sub-committee has been appointed to compile a short history of anti-tuberculosis movement in India. There are three committees, one each for the management of the institutions which the Association administers. There is a committee to

formulate classifications. Another sub-committee has recently been appointed to advice on the revision of the rules and regulations of the Association and its affiliated bodies.

Indian Journal of Tuberculosis

The Association publishes Indian Journal of Tuberculosis, a quarterly. This Journal publishes important papers written by tuberculosis workers. The Editor of this Journal is Dr. P. V. Benjamin, Tuberculosis Adviser, Government of India, and Technical Adviser to the Association. Dr. P. K. Sen, Professor of Medicine (Tuberculosis) Government Medical College, Calcutta, and Dr. T. J. Joseph, Medical Superintendent of the Lady Linlithgow Sanatorium, Kasauli, are Associate Editors.

International Contacts

The Tuberculosis Association of India is affiliated to the International Union Against Tuberculosis. It has five Councillor Members on this body from India and has over one hundred and sixty ordinary members. Dr. P. V. Benjamin, the Technical Adviser of this Association, is at present the President of this Union and also the working President of the XIVth International Tuberculosis Conference to be held in India from 7th to 11th January, 1957, arrangements for which are being made by the Tuberculosis Association of India. Rajkumari Amrit Kaur, Union Minister for Health is the Honorary President of this Conference. The Association has over thirty corresponding Members in various countries. It has regular contact with all the National TB Associations in the world.

Task ahead in the Five Year Plans

The Association realises that a comprehensive tuberculosis service in India should provide for free treatment, isolation and rehabilitation of tuberculous patients and ex-patients. It also recognises that provision must be made for the care of families in cases when the bread-winners become patients. In India it is estimated the provision for the treatment of tuberculosis patients works out to about one bed for 35 deaths or one bed for 175 patients. The number of qualified specialists, doctors, nurses and health visitors is very small. The Association and its affiliates, however, realise their responsibilities for stimulating public interest through education and demonstrations in order to secure people's co-operation in initiating and carrying out governmental measures.

Now problems arising out of measures already mentioned demand constant effort on the part of non-official bodies like the Tuberculosis Association of India. With broad principles in view, plan for the control of tuberculosis in the two Plan Periods are as under:

(1) B.C.G. vaccination which is in progress has has to be intensified and the mass campaign is to be completed during the Second Five Year Plan Period.

(2) Upgrading of 100 existing TB clinics and also establishment of 200 new ones, so that every district and town in the country will have at least one modern TB Clinic.

(3) Addition of at least 10,000 beds for the isolation of patients in cities and towns, and institutions for specialised treatment.

(4) Establishment of Work Centres for rehabilitation of ex-patients.

(3) INDIAN PUBLIC HEALTH ASSOCIATION

(A short sketch)

Dr. S. C. Seal, Calcutta

Public Health Service completed its hundredth year in England only 8 years ago and the first Public Health Association to start in the world is the Society of Medical Officers of Health in England who celebrated their centenary only in May, this year. The American Public Health Association came into being in 1873, and the Canadian Public Health Association in 1912. India, though became conscious of her public health problems as far as back as 1859 when the Royal Commission was appointed to investigate into the health of the army active public health services did not begin till 1912 except for the passing of some Acts. The Registration of Birth and Deaths was the first Act promulgated in 1873 and the Vaccination Act in 1880. After a set back for sometime due to the World War I the public health services were revived in 1920 following the Mantague-Chemsford Reforms in 1919.

With such a short history, public health, either as a service or as a science, is still very young and it is no wonder that in spite of some attempts being made from time to time to organise the workers under an integrated all India Association, such as we are going to have now, it did not succeed. In fact, in view of the immaturity of the Health Services, the extraneous forces proved strong enough to nip those attempts in bud, but to-day the conditions have changed and perhaps will change further as time rolls on. People of the country have just began to taste the fruit of public health and preventive medicine and it is believed that with the expanding public health programmes and the nation-building activities time is not far off when there will be a better realization of the dictum "Prevention is better than cure" by the medical public, the Government and the people of the country alike.

It would be opportune here to give a short resume of the circumstances and of the previous unsuccessful attempts which have finally led to the inauguration of the Indian Public Health Association to-day.

The first attempt, as far as known to the author, was made in 1936 when the late Dr. R. B. Lal and Dr. K. V. Krishnan of the All India Institute of Hygiene & Public Health, Calcutta, tried to organise a Health Association on an All India basis but having failed to do so started a society called the Public Health Society of Calcutta. This society of which the author was a member functioned for about 3 years and was holding a monthly meeting for Scientific Discussion. These papers were published in the Indian Medical Gazettee and were finally brought out in the form of a volume at the end of each year. The Society did not function after the commencement of the 2nd World War. It may be mentioned here that an Association under the name of Bengal Public Health Association was already in existence at that time with Col. A. C. Chatterjee, the then Director of Public Health, Bengal, as its Chairman. This Association is now named as West Bengal Public Health Association. There are similar associations in many of the States in India at the present time.

The next attempt to bring about an All-India Association was made by the author in conjunction with the late Dr. R. B. Lal in the year 1944 when an Association under the name Asoka Society was established with Dr. Lal as its Chairman and the author as its Secretary. The membership was first extended to the Public Health Officers who came to the Institute for post-graduate training. The idea was to start the Association with the young public health workers who after passing out from the Institute were dispersing throughout the country as Health Officers etc. For dirth of active workers this Association had a premature death but the account is still being maintained by the Central Bank of India, Calcutta. The Situation, however, turned for the better after independence. As a first measure, the author with the active co-operation and assistance of Dr. K. C. Patnaik and Dr. K. V. Krishnan (ex-Director of the Institute) started an Alumni Association of the All India Institute of Hygiene and Public Health, Calcutta, with 40 Founder Members and a cash amounting to Rs. 400. Col. Lakshmanan, the Chairman of the Interim Committee of the Indian Public Health Association has also been the Chairman of that Association since its inception. The author and Dr. K. C. Patnaik respectively acted as its organising and general secretaries for the first two years. This Association had a good start. Its membership now exceeds 700. It publishes a bulletin and has accumulated a fund of several thousand rupees.

In September, 1953 the late Col. A. C. Chatterjee of Calcutta and Dr. A. C. Banerjee of U.P. and several others including Dr. B. Ganguly published an appeal in the newspapers for an all India Association. This was followed up by Dr. Ganguly who met the authorities at New Delhi to secure their co-operation. He was however, advised to see Dr. Krishnan, the then Director of the All India Institute of Hygiene and Public tion of the latter Dr. Ganguly discussed the matter Health, Calcutta, in the matter. On the suggeswith the author which led to the preparation of a draft scheme, later endorsed by Dr. B. C. Roy, Dr. Krishnan, Dr. B. C. Dasgupta, Col. Lakshmanan and other leading workers in the field. Finally a preliminary meeting was called on July 10th 1954 at the Calcutta Medical Club under the Chairmanship of Dr. B. C. Dasgupta. Over 50 prominent public health workers including Dr. K. C. K. E. Raja, Dr. T. Lakshminarayan and many others attended the meeting at which the prpoposal for the formation of the Public Health Association was approved and Col. C. K. Lakshmanan was proposed as a Chairman and Dr. B. Ganguly as the convener Secretary. A special committee was also appointed to draft the constitution.

A second meeting was held on the 18th July,

1954 at the All India Institute of Hygiene & Public Health, Calcutta, under the Chairmanship of Col. C. K. Lakshmanan, Director-General of Health Services, India. It was attended by over 150 medical men and Public Health workers. It was decided at that meeting to take steps for enlisting members from all over the country. It was also recommended that the Memorandum and Rules of the Association as drafted by the Sub-Committee be ratified at a general meeting of the regular members of the Association after it has been duly inaugurated.

A third meeting was held on the 10th September, 1955 under the Chairmanship Col. Lakshmanan at the All India Institute of Hlgiene & Public Health, Calcutta. This was the first meeting of the Founder Members at which over 120 persons including representatives from 12 States and various branches of Public Health Work registered themselves as members. An interim working committee was formed consisting of the following members:—

Members of the Working Committee :

Chairman—Col. C. K. Lakshmanan, Director-General of Health Services, Govt. of India, New Delhi.

Vice-Chairman—Dr. B. C. Das Gupta, Ex-Dictor of Health Services, Govt. of West Bengal, Calcutta.

Secretary-Cum-Treasurer—Dr. S. C. Seal, Professor of Epidemiology, All India Institute of Hygiene and Public Health, Calcutta.

Members :

1. Dr. K. V. Krishnan, Director, All India Institute of Hygiene & Public Health, Calcutta.
2. Dr. B. Ganguly—Editor, Health nd Welfare.
3. Dr. A. Mukherjee—Chief Health Officer of Calcutta Corporation.
4. Sri G. N. Mitra—Public Health Engineer, Govt. of West Bengal.
5. Dr. (Mrs.) Mukta Sen—Professor of Maternity and Child Welfare, All India Institute of Hygiene and Public Health, Calcutta.
6. Mrs. Uma Gupta—Nursing Superintendent, Director of Public Health, Govt. of West Bengal.
7. Dr. J. K. Bhattacharjee—Asstt. Director of Public Health, Govt. of West Bengal, Calcutta.

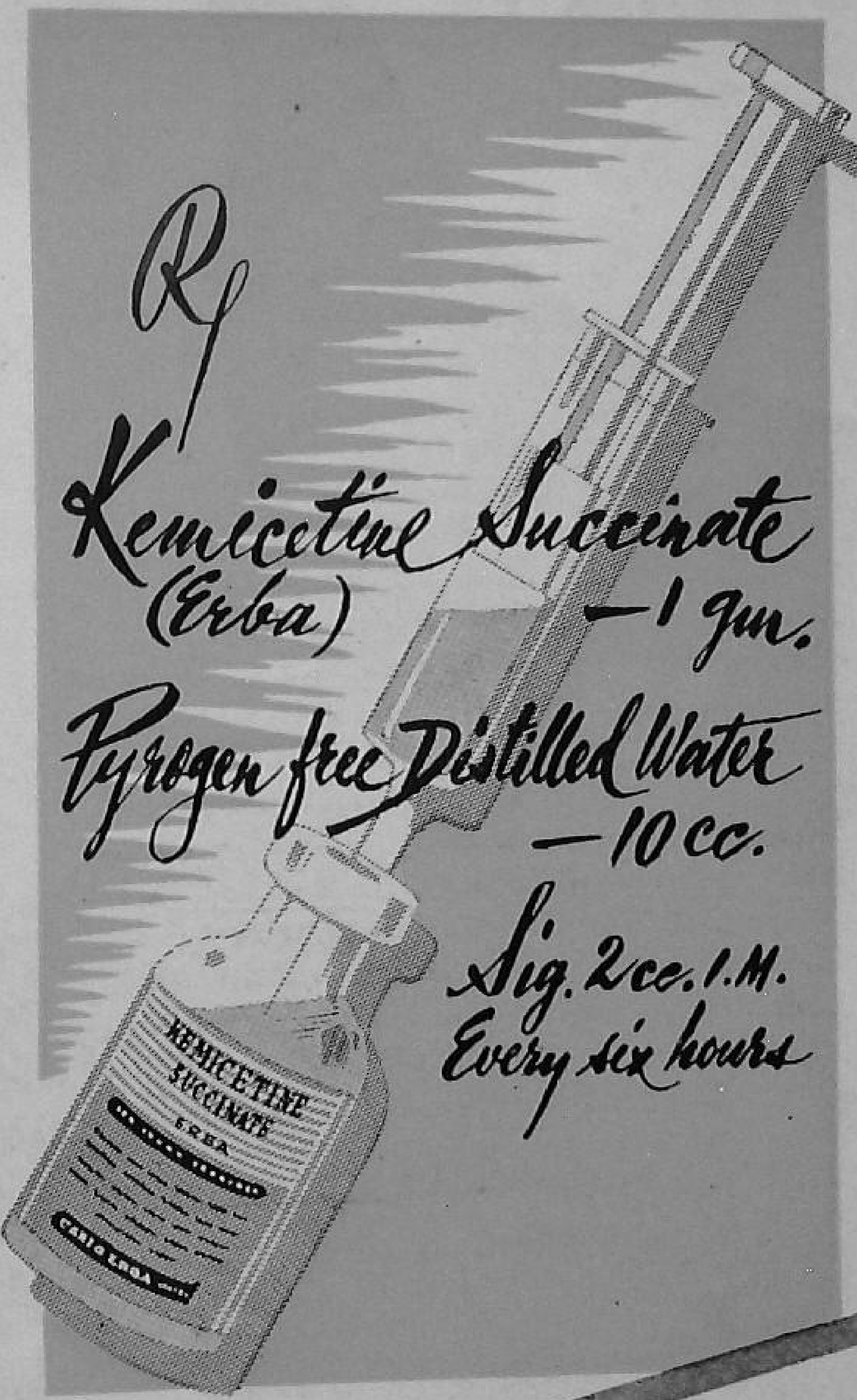
With power to co-opt 10 members one each from some of the A. B. and C. States.

In this meeting a decision was taken by the committee to make all preparations for enlisting a large number of members, finalisation of the rules and regulations, and inauguration of the association. The interim Working Committee and the various sub-committees constituted from time to time to help his committee met several times during the past one year to discuss about the progress of the work and to finalise all preparations for the inauguration of the Association at Calcutta by Rajkumari Amrit Kaur on the 28th September, 1956. With the inauguration taking place this day the Indian Public Health Association enters into the active phase of its life history with every prospect of success in its eventful future career.

Carlo Erba present their latest !

The first & only

WATER SOLUBLE CHLORAMPHENICOL



Indications

- Typhoid and paratyphoid fevers
- Gastro-enterocolitis
- Brucellosis
- Whooping cough
- Herpes zoster
- Bacterial and virus pneumonia
- Bartonellosis
- Venereal infections
- Surgical infections
- Gynaecological infections
- Urinary infections
- Framboesia
- Meningitis (non tuberculous)
- Dermatitis
- Otitis
- Trachoma and other eye diseases
- Rickettsiosis (typhus and Q fever etc.)

DOSE

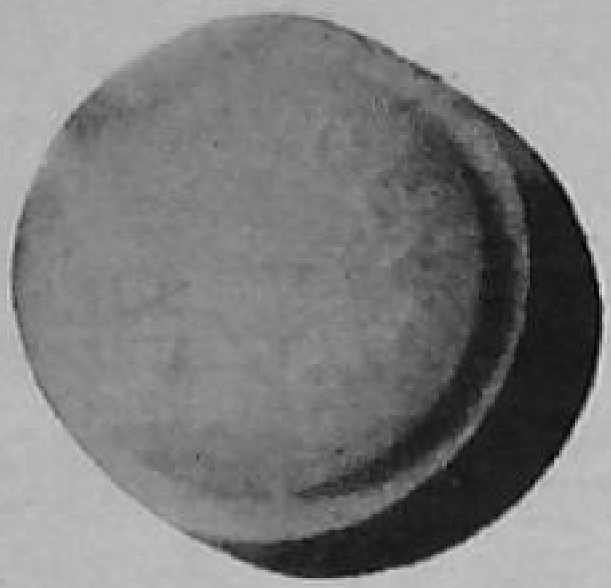
10% Solution 2 to 6 c.c. I.M. every six hours according to the acuteness of the disease

CARLO ERBA · MILANO

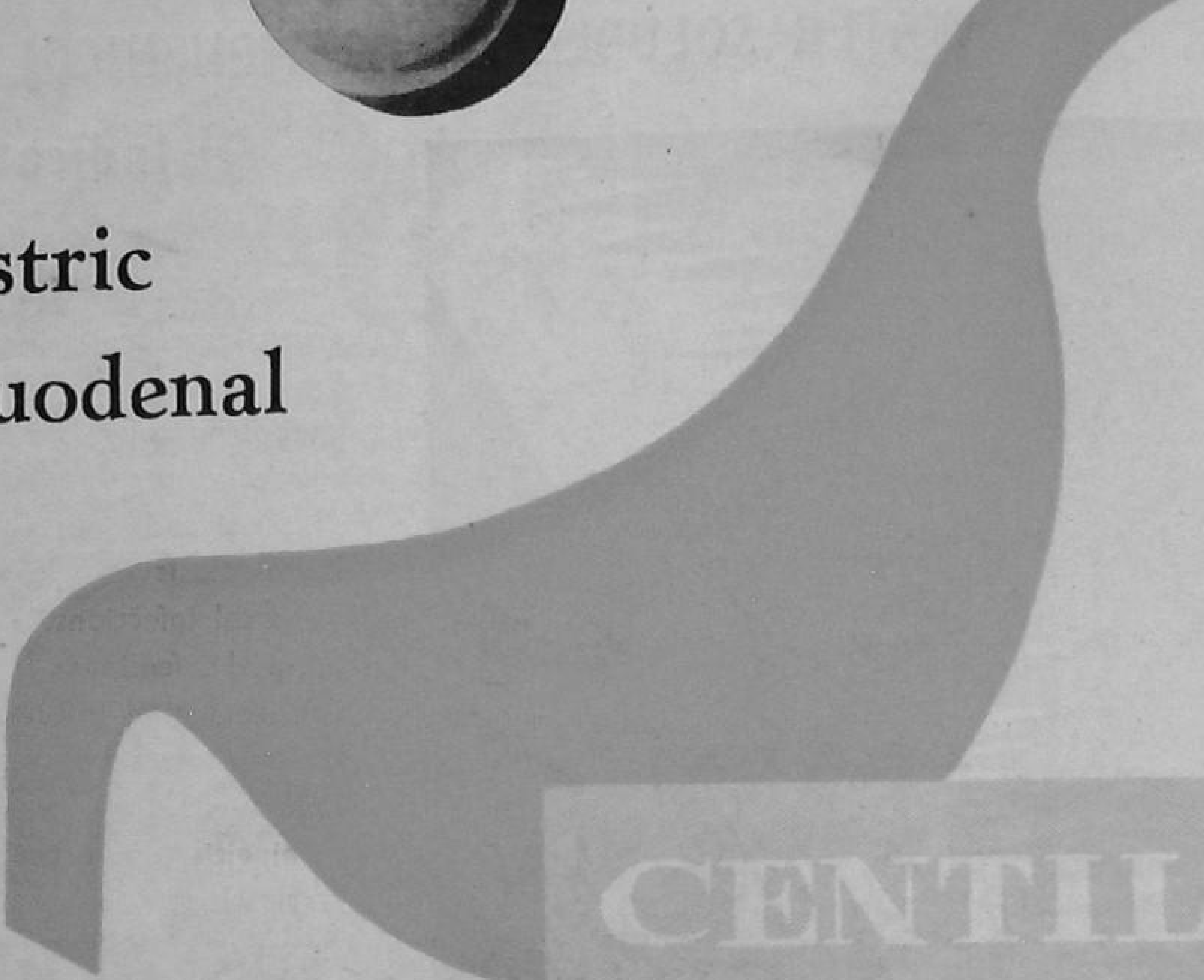
KEMICETINE ERBA
(levorotatory chloramphenicol)

Sole Distributors in India : **MAC LABORATORIES PRIVATE LTD.** – G.P.O. Box 1831 – **BOMBAY-1**

Distributors for Eastern India : *A. K. Distributors* (Pharmaceuticals) *Private Ltd.*
43, Dharamtala Street, Calcutta-13.



for gastric and duodenal ulcers



CENTIL

ERBA

Boxes of 24 and 100 cachets
(4-6 daily)

Sole Distributors in India :

MAC LABORATORIES PRIVATE LTD.

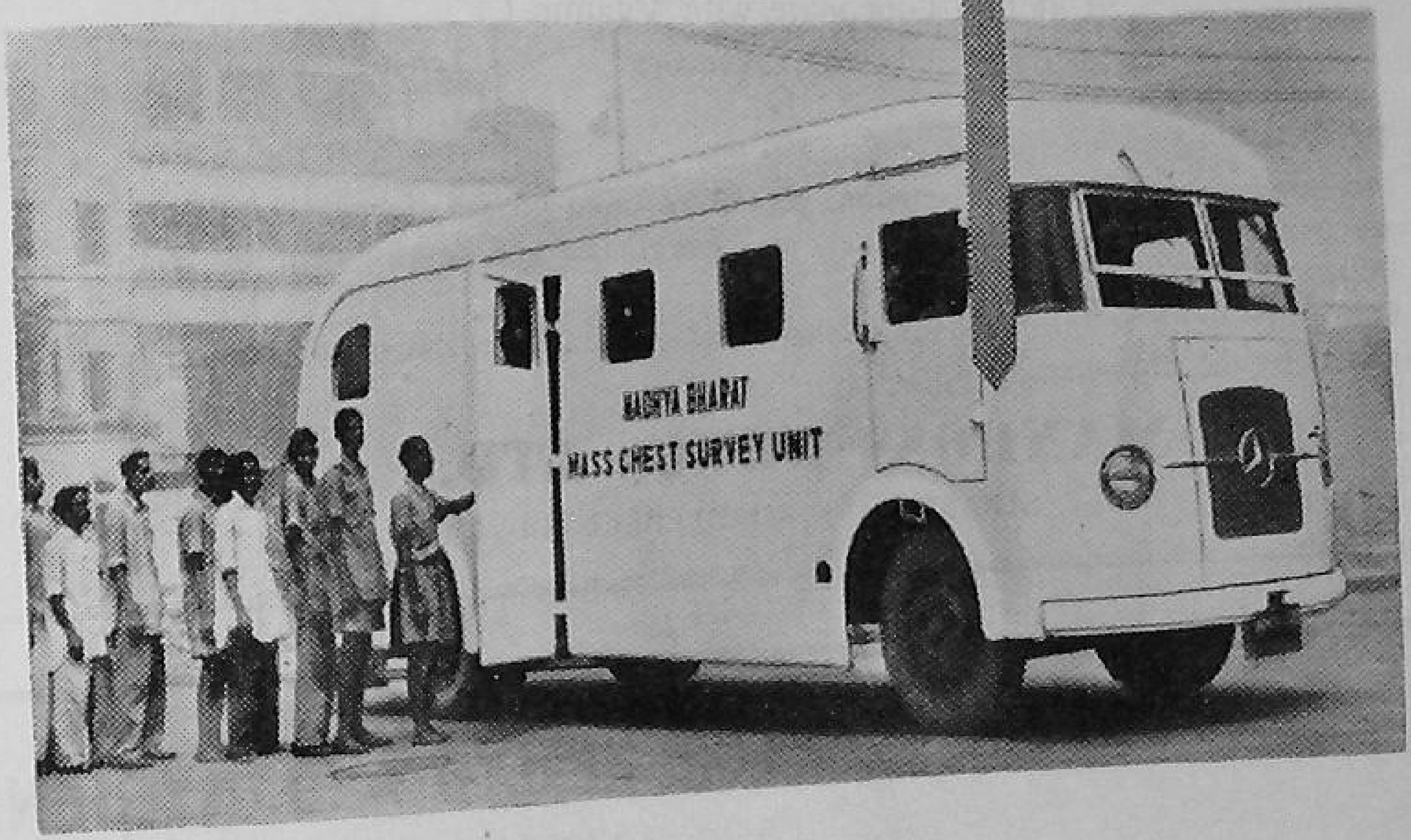
G.P.O Box No. 1831

BOMBAY.-1

Distributors for Eastern India :
A. K. Distributors (Pharmaceuticals) Private Ltd.
43, Dharamtala Street, Calcutta-13.

- Blocking-action on vagus innervation by a new **synthetic anticholinergic (Esentil)** which does not induce the collateral disturbances peculiar to remedies based on belladonna and methantheline bromide.
- Ion-exchanging buffer-action ; efficient and prolonged protective action on the gastric mucosa on the part of **carboxymethylcellulose sodium.**
- Prompt antacid action of **magnesium oxide** prolonged and strengthened by that of carboxymethylcellulose sodium.

A COMBINED EFFORT TO FIGHT TB IN INDIA



Three independent organizations have joined hands in building the Mobile Mass Chest Survey Unit, shown above, for the Government of Madhya Bharat. Tatas have provided the Mercedez Benz Chassis, the Gotham Construction Works have built the body and the completely self-contained, powerful Mass Chest Survey X-ray apparatus has been supplied by Philips Electrical Co. (India) Private Ltd.

A Mobile Mass Chest Survey Clinic is a powerful weapon in the hands of the Madhya Bharat Government and for that matter in the hands of any health authority to fight the menace of T.B. This unit, with all the basic advantages of a stationary clinic, will be able to cover a wide area and bring under control a larger number of people than was ever possible before.

The X-Ray Tube being positioned.

PHILIPS—TATA—GOTHAM

P7

LIVAFOLBIN

Two c.c. contains :

Liver Extract	.. ..	50 gm.
Folic Acid	.. ..	7.5 mg.
Vitamin B_{12}	.. ..	25 mcg.

Indicated in : Acute pernicious anaemia, Macrocytic Anaemias, Sprue.

Subnormal growth in children is reported to respond to Vitamin B_{12}. Increased appetite were noted in the patients treated and also for the functioning of bone marrow.

Dosage : To be injected intramuscularly 2 c.c. daily or alternate dayss as directed by the physician.

Packing : 2 c.c. amps. and 10 c.c. & 30 c.c. R. C. phial.

CALCIDOXON

(Calcium Gluconate with Vitamin C)

		Five c.c. contains	Ten c.c. contains
Calcium Gluconate	..	10%	10%
Vitamin C	..	100 mg.	200 mg.

Indicated in : Pregnancy, lactation, periods of rapid growth, febrile conditions, old age convalescence and debility states, in haemorrhagic and development of teeth and bones.

One ampoule to be injected daily or alternate days intramuscularly or intravenously as directed by the physician.

MANDOSS DRUGS LTD.

221/2, STRAND BANK ROAD, CALCUTTA—1

FOR HEALTH AND HYGIENE

BUY PAINTS YOU CAN CLEAN

DUROGLAZE No. I ENAMEL

FOR WOOD WORK, CANE & STEELFURNITURE DOORS & WINDOWS

MURISAN A PLASTIC EMULSION PAINT FOR WALLS.

PARROT OXIDES FOR CEMENT FLOORS

MANUFACTURED IN INDIA BY

BRITISH PAINTS

(INDIA) LIMITED

CALCUTTA, BOMBAY, DELHI, LUCKNOW, GAUHATI, SILIGURI, VIJAYAWADA, DIBRUGARH, MADRAS, COCHIN.

PENICILLIN

manufactured for the first time in India

from Indigenous Raw Materials
And
Marketed since January, 1954

The result of five years of systematic research to study every step of manufacturing process, at a cost of several lakhs of rupees

INSTALLATION FOR LARGER SCALE PRODUCTION IS IN PROGRESS

Medium of Culture patented by us in India and Europe

The average yield of Penicillin in this medium has reached the average usually obtained in Europe and America. WITH LARGER PRODUCTION, COST WILL DEFINITELY BE CHEAPER.

STANDARD PHARMACEUTICAL WORKS LTD.

CALCUTTA-14

FIRST MANUFACTURERS OF PENICILLIN IN INDIA

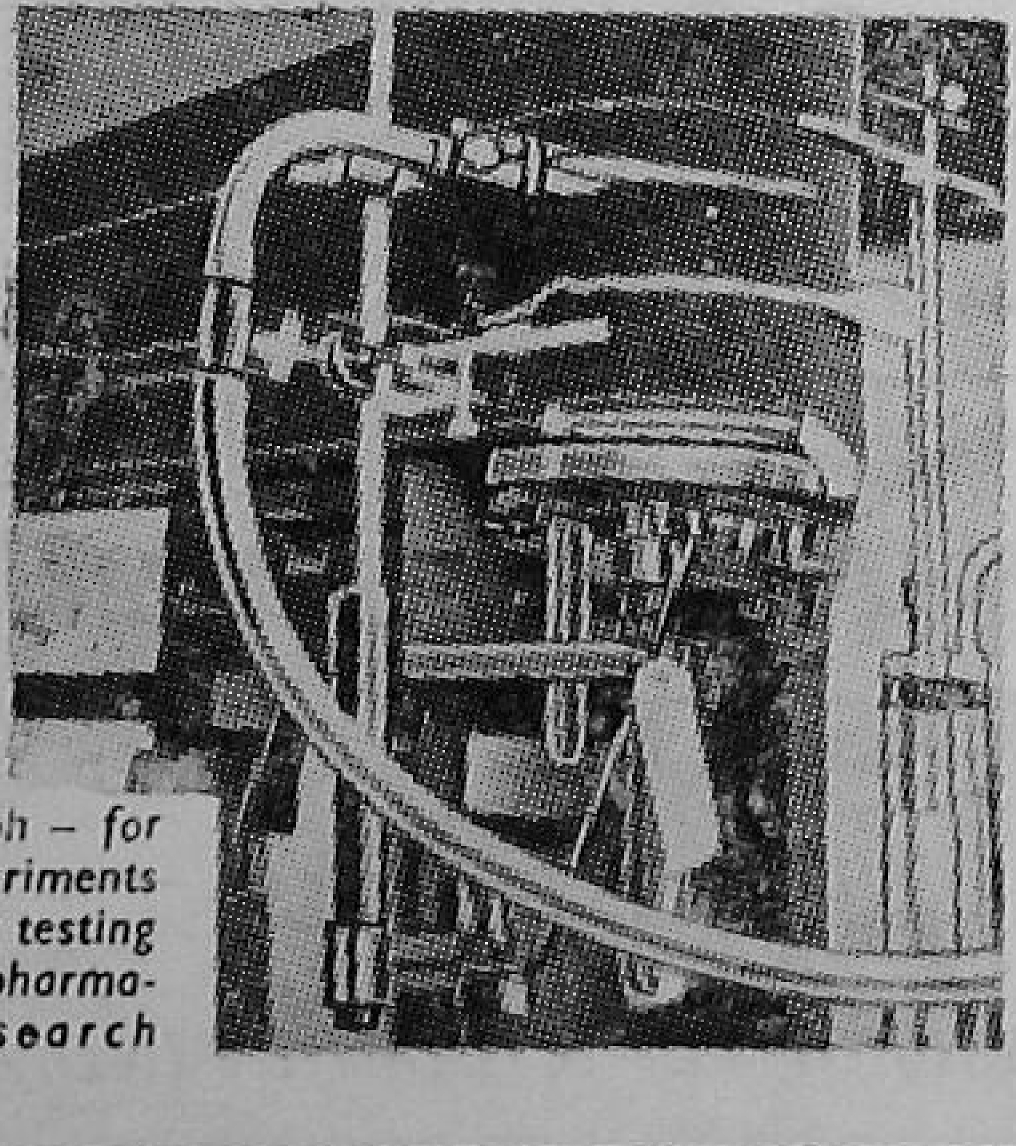
THE MATERIA MEDICA OF JIVAK

More than twenty-five centuries ago, Bhisakraj Jivak, then a student of medicine at the University of Takshashila, was asked by his professor to collect specimens of such plants available within five miles of Takshashila as did not have any therapeutic value. After a prolonged search, he came back to say, that each plant he saw, was efficacious in some ailment or other.

Much of this vast Materia Medica is lost, but modern science has evolved very efficient techniques of extracting the active principles from herbs and plants in standardised strengths ensuring accurate dosage.

Rauwolfia serpentina, an indigenous plant, has long been known for its sedative action. After years of patient research, our laboratories have produced from it two very effective preparations:

SANTINA for mental disorders
and
RAUWOLFINA for high blood pressure.

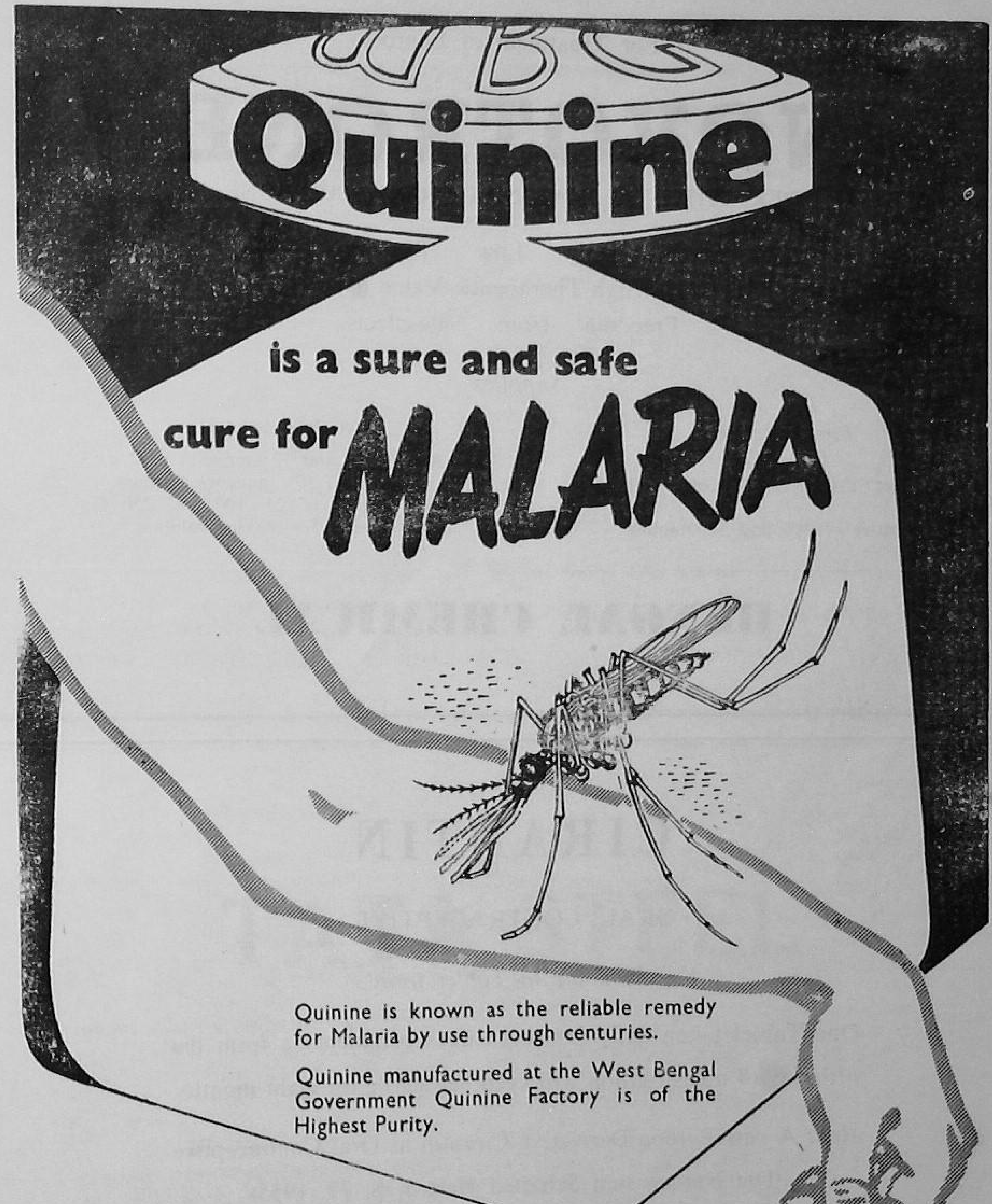


The Kymograph – for recording experiments on animals for testing drugs in our pharmacological research laboratory.

CALCUTTA CHEMICAL

Ethical Pharmaceuticals since 1916

CPF2


Quinine
is a sure and safe
cure for MALARIA
Quinine is known as the reliable remedy for Malaria by use through centuries.
Quinine manufactured at the West Bengal Government Quinine Factory is of the Highest Purity.
Available from the Government Quinine Sale Depot, Old Hindusthan Buildings, Calcutta-13 and also from Post Offices in rural areas.
QF—1—56

For Treatment of Leprosy

NOVOTRONE

DERIVATIVE OF DIAMINO-DIPHENYL-SULPHONE

Extremely Low Toxicity
● High Therapeutic Value ●
Freedom from Side-effects

Supplies :

For Oral Use :

Tablets of 0·5 G (7½ Grs.) each

In bottles of 100 and 500 tablets.

For Parenteral Use :

Boxes of 6 and 12 ampoules of 2 c.c. & 5 c.c. of 50% aqueous solution. Also bottles of 25, 100 and 250 G Granules for making solution.

BENGAL CHEMICAL

CIRANTIN

(ORAL CONTRACEPTIVE)

Available in Tablet form

One Tablet taken daily for seven days commencing from the fifth day of menstruation will keep her sterile for eight months.

Ref : A new Pyrone Derivative Cirantin as Oral Contraceptive (Die Naturwissen Schaften Heft 3. S. 77. 1955)

FOR FURTHER PARTICULARS
Please Contact :

GLUCONATE LTD.

CALCUTTA—13

" . . . . . . It is an unfortunate fact that in our country we are not so careful about Health as we ought to be. It is time that those who know both the value of Health and how to keep it up, should tell all concerned how they should look after themselves . . . . . ."

SRI SRI PRAKASA.

TATA STEEL

3 units in drug industry
for advancement of medical science and service to humanity.

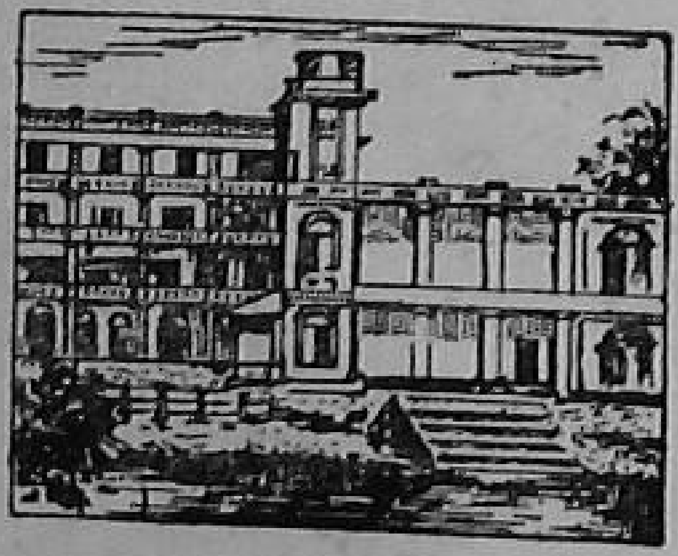
For a drug industry, the co-ordination of the three units, namely (a) Research and Control, (b) Clinical Study and (c) Production is the spearhead of advance. Bengal Immunity Co., Ltd., the premier institution for manufacture of Biological and Pharmaceutical products, has harnessed and co-ordinated these three units :

RESEARCH.

The Bengal Immunity Research Institute—at 39, Lower Circular Road, Calcutta-16. Researches carried on : (i) fundamental research ; (ii) improvement, standardisation and evaluation of medicaments ; (iii) improvement of existing processes ; (iv) development of newer techniques ; (v) research for newer drugs , (vi) inter-allied problems. Fully equipped with an up-to-date library, physico-chemical & other appliances and a museum of Indian medicinal plants

The Bengal Immunity Therapeutic Ward—at R. G. Kar Medical College Hospitals, Calcutta, consisting of 24 beds, fully equipped and maintained by the Company. Here full facilities are available for testing the efficacy of drugs evolved.

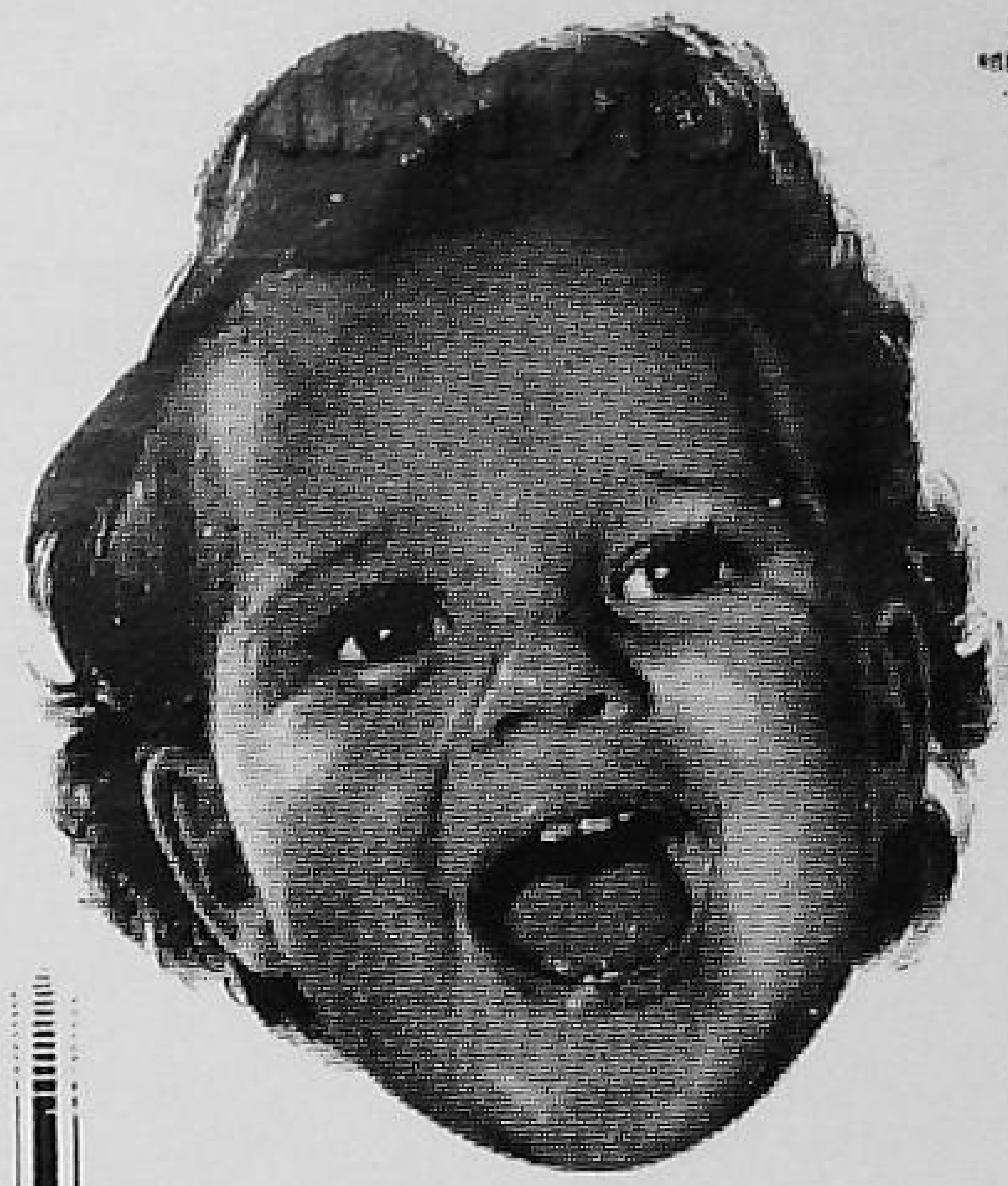
CLINICAL STUDY.



PRODUCTION.

The Bengal Immunity Laboratory—at Baranagore, 24 Parganas, manned by efficient technical staff and equipped with various appliances for the production of Sera, Vaccines, Organo-therapeutic products like Liver, Pituitary, Adrenaline, Bile salts, etc., various pharmaceutical preparations and a large number of modern synthetic drugs.

BENGAL IMMUNITY CO., LTD. CALCUTTA-13.



For the child who
Lactogen has earned a world-wide reputation
safe and reliable substitute.

Prepared to resemble as closely as possible the formula of breast milk, it offers a well balanced and strictly uniform diet. By homogenization, the fat globules are made even smaller than those of human milk, facilitating digestion, while pasteurization has ensured the removal of pathogenic organisms.

Lactogen is also suitably fortified to provide adequate (but not excessive) intake of essential Vitamins A & D & Iron, based on standards recommended by the National Research Council, Washington.

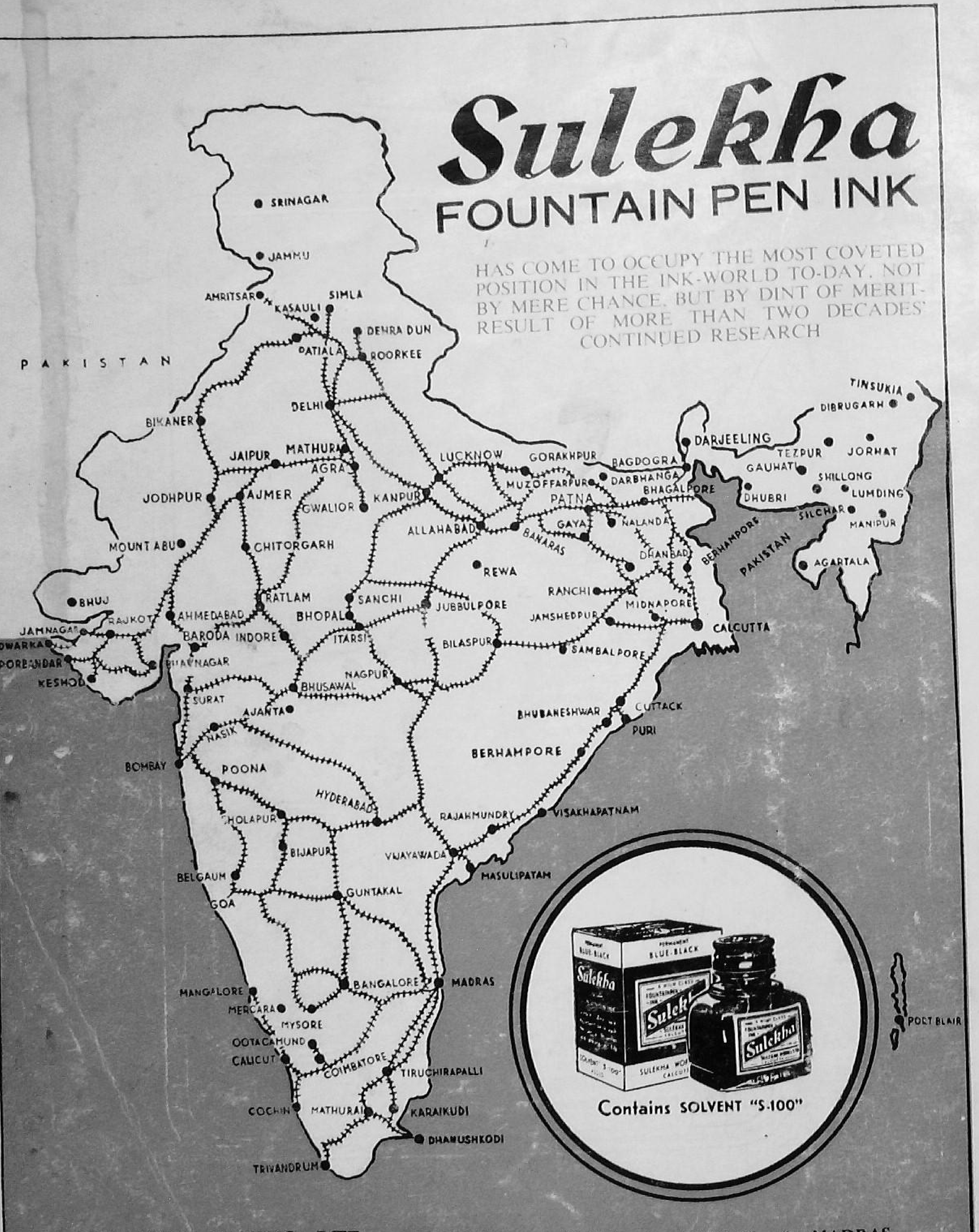
LACTOGEN

The better milk for babies

NESTLE'S PRODUCTS (INDIA) LTD.

P.O. Box 396 Calcutta, P.O. Box 315 Bombay, P.O. Box 180 Madras

L6/6/17



Published by Dr. S. C. Seal—Managing Editor, Indian Journal of Public Health, 110, Chittaranjan Avenue, Calcutta-12 and printed by him at the press of Messrs. Gossain & Co. (Printers) Private Ltd., 7/1, Grant Lane, Calcutta-12.